NOVEMBER 1999
Volume 67 No 11

Amateur Radio

Journal of the Wireless Institute of Australia

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- ALARA Meet - Brisbane
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- High Sea Antennas
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Amateur Radio

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General

VK7 Division wins 1999 Remembrance Day Contest 4
Alek VK6APK

Women in Radio 11

ALARAMEET 11

VK5AMD — a Remarkable YL 15

AWARDS for YLs 17

Where On Earth Are You? 19
Bob Harper VK4KNH

Stacking Yagis, Phasing and Matching 22
Gordon McDonald VK2ZAB

An RF Attenuator 30
Keith Gooley VK5OQ

The 'Moorabbin', a Simple Regenerative AM Receiver 32
Novice Notes — Peter Parker, VK3YE

Technical

Adapting the Astatic D-104 Microphone 40
Technical Abstracts — Gil Sones VK3AUI

Columns

Advertisers' Index 56
ALARA 11
AMSAT Australia 45
AR on the Web 39
ARDF 47
Club News 10
Contests 48
WIA Division News
VK1 Notes 6
VK2 Notes 9
VK4 Notes 8
VK6 Notes 7
VK7 Notes 6
Editor's Comment 2
Hamads 54
HF Predictions 52
Ionospheric Update 51
New Members 3
Novice Notes 32
Over to You 50
Repeater Link 37
Silent Key 46
Spotlight on SWLing 49
Technical Abstracts 40
Technical Correspondence 50
Try This 36
VHF/UHF - An Expanding World 42
WIA Comment 3
WIA News 3
WIA Division Directory 56
WIA Federal Directory 2

Our cover this month

ALARAMeet 1999 participants in Brisbane on 2/3 October

High Sea Antenna Story advertised on cover has been held over

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

Photostat copies

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Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
National Radio Society
Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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EDITORS COMMENT

By Guest Editor
Bob Harper VK4KNH

Changes

As the end of this year approaches (and perhaps the decade and century depending upon your point of view) there are many changes to contend with.
Externally there is the question of the "Australian Republic" referendum that will be voted on about the time that this magazine is due to arrive. Mid-2000 will see the introduction of the GST, which may be a blessing or threat, depending on how it affects you, and then Spring 2000 is the Sydney Olympics. I cannot imagine how much that will affect the lives of Sydney-siders and Australians generally.

But of greater interest to amateurs, I believe, is the state of health of Amateur Radio. Every time I hear somebody moan about how the hobby has changed, or complain that things have gone bad, I wonder what part that person played in the changes. Certainly most would automatically deny any involvement. Yet that is the very problem we face - lack of enthusiastic involvement. Few people are stepping forward. Fewer people are carrying the load of the general public.

Most amateurs see the costs of their equipment increasing, even though the old gear probably still works as well as the day it was bought. They see their licence fees rising yet usually at a rate lower than the CPI. They see their WIA membership fees rise; yet it is still lower than most comparable organisations and certainly less than the fees of any union that represents its members nationally and internationally. Many people still "cough up" far more money for cigarettes each year.

We are afraid of increasing the costs to members because we see the almighty dollar as one reason we are losing members. Yet many spend more on the Internet than on membership. Costs no doubt influence some, but where there is perceived value for money costs become less of a factor. We also blame the CW for frightening potential members off but if there were sufficient incentive, that would not cause a problem either. The one word that we keep coming to is "incentive", - the "What do I get out of it?" question. The "value for money" judgement crops up time and again.

In fact, for the money, each member gains a very good service from the WIA.

The problem is that few members use every service available and those that they don't use hold no value at all to them. Like it or not we are all at least a little selfish. What use is the examination service to those who have passed all that they wish to? Yes, I know that every member needs to encourage others to gain a licence but does the average member think that way? Every service suffers the same criticism. Those that don't use repeaters can't see the value in supporting them. Those that don't enter contests don't see any value in supporting them either. We become narrowly focused on just those activities that we take part in.

Not every member wants AR Magazine, yet AR reaches more members than any other method of communication, short of direct mailing. Even direct mailing doesn't reach every member! I occasionally hear people ask for more material on a particular topic but rarely have an accompanying offer for more materials. When they do it is usually gratefully accepted and printed.

If you really think about it, AR is the perfect place to share ideas, offer views, advertise your club's events, seek advice and gain new members -as long as the potential members read AR. Do you share your old copies of AR around the club and local amateurs? Perhaps leave some with town or school libraries.

As we age, and we all do, we become less enthusiastic about change. But we all change, our bodies change, our world changes, even our friends change, so we should expect that change is inevitable. Will we face change with grace and dignity or will we go kicking and screaming all the way? Surely it depends on how much involvement we have in those changes. I ask that you become and stay active in your club and with the WIA in order to be a part of our future and not, sadly, relegated to our past.

73 for now,
Thank-you Bill for this opportunity,
Bob VK4KNH

Comment

Federal President, Peter Naish VK2BPN.

During October a teleconference of Federal Council and Executive was held. This is one of a number of occasions when we get together to discuss the wide range of matters which concern the amateur radio service.

Although the vast majority of matters are decided via correspondence as and when they occur, usually by e-mail, it is important that we do meet "live" by telephone from time to time. This gives us a forum for rapid interchange of ideas that can then be progressed by correspondence.

At this latest teleconference your Council make some excellent progress on vital matters embracing key items of policy. These were wide ranging and more detail on these will be made available to you shortly.

Next month we are meeting with the ACA to progress our claim to a wider slice of the top-end of the 80 metre band, the so-called "DX Window". And then, in December, we have the next of our regular meetings with ACA on other matters of concern. Again, as soon as we can after these meetings we will bring you a report on what took place.

All of this means a heavy work load for the Council and the various expert committees, Despite our "amateur" status, the WIA is a professional body and we aim for the highest quality in our negotiations with others. Often it takes a long time to see the progress from our efforts and I ask you to be patient with us. Just as soon as a result becomes available from our work, you will hear about it from the WIA.

Peter Naish, VK2BPN
WIA Federal President.

New Members

The WIA bids a warm welcome to these new members who were entered into the WIA Membership Register in September.

VK4TI	MR Trent SAMPSON of Toowoomba
VK4APH	MR John GALLAGHER of Gaythorne
VK4IJ	MR Sabby CONN of Goodna
VK4KNW	MR Noel WILLIS of Runcorn
VK4WDM	Rev Wayne MELROSE of Alice River
L21169	MR H K GIFFORD
VK2DLF	MR G GOERGE
VK2GWK	MR H TOBBE
VK2MNU	MR K PURVES
VK3ABX	MR V D BOND
VK3DA	MR P ALBERS
VK3HEH	MR J HALL
VK3PP	MR T MITCHELL
VK3SB	MR H MOFFATT
VK5AZ	MR R K VON SANDEN
VK6TQ	MR K R RHODES
VK7WK	MR P W KING

WIA News

Wireless institute of Australia and the Australian Communications Authority cooperate in Olympic Training exercise.

Radio communications activity in Sydney leading up to and during the Olympics will be at an all time high.

It will be a challenge to ensure that the Sydney Organising Committee for the Olympic Games (SOCOG), local and international broadcasters, commercial enterprises and the general public all enjoy interference free communications during that period.

In order to control the level of interference to communications during the Olympics a large contingent of ACA staff from around Australia will converge on Sydney. Teams will be stationed at strategic locations throughout the Sydney area, ready to respond to any communications problems that may arise.

To familiarise interstate ACA staff with the Sydney area, particularly vehicle traffic and the radio-communications environment, the ACA in conjunction with SOCOG participated in a two week Olympic test event.

The Sydney Office of the ACA was tasked with producing a number of difficult radio fox hunts which would test the ACA's response times and operating procedures. It became apparent that during the test event the ACA required the assistance of reliable technical people who would volunteer their time to assist in the exercises. The Sydney office of the ACA approached the NSW Division of the WIA for assistance and the response was tremendous. A number of WIA sites were offered along with equipment and technical personnel.

In very short time a transmitter supplied by the WIA operating in the 70cm band was set up in the Parramatta area. This ran in parallel with another amateur transmitter on the same frequency in the inner western suburbs. Both transmitters fed multi element Yagis pointed at the Sydney ACA office.

Teams in vehicles commenced direction finding from the far outer suburbs. Using a variety of DF equipment and yagis connected to Rohde Schwarz EB200 receivers they first located the transmitter at Parramatta and it was turned off. On reporting their success Officers were told the transmission still existed. This was a little disheartening for the participants who recommenced their activities in pursuit of the other transmitter. Surprisingly the simultaneous transmissions did not confuse the direction finding exercise.

Aub Topp VK2 AXT, of the WIA spent a lot of time in going back and forth to his shack over the fortnight turning the transmitter on and off as required. His wife must be sick of the telephone calls from the ACA

Other exercises such as a walking and intermittently transmitting mobile in the Darling Harbour and a transmitter located in an office block in Bondi junction kept the ACA field staff on their toes.

Interstate ACA staff had a first hand experience of Sydney traffic particularly during the train strike. Exercises continued in standstill traffic situations. On the humorous side was the pronunciation of suburb names by out-of-towners. I am personally unaware of a suburb named "Rozellie"

The ACA is indebted to the WIA for its involvement. WIA members in Sydney put in a lot of time and effort to assist in the successful trial.

Further test events are scheduled for the new-year.

VK7 Division Wins 1999 Remembrance Day Contest

Tasmania Retains Title by Improvement in both HF and VHF

Through consistent improvement in both the HF and VHF sections, the VK7 Division retains the Remembrance Day Contest premiership for 1999. Congratulations to all those who participated and submitted their logs.

The most improved division this year was VK3. From last place in 1998 to a close second this year is an outstanding effort. A modest improvement in the HF section would have seen the trophy in their hands this year.

All divisions except VK2 and VK6 registered some improvements in their divisional scores over last year. Also encouraging this year is the number of Limited Novice class operators who took part. Hopefully this increase in contest activity will continue.

With the rapid progress of technology it seems the rules are once again due for amendment. This year saw a flurry of activity in VHF Packet Radio operation. Packet is of course a legal mode in the contest and should remain as such. The issue of automated contest station operation, however, needs to be clarified and included in the rules for the future. This matter will be debated and clearly defined in time for next year's contest.

For myself, I thoroughly enjoyed participating in the contest and I know by the numerous positive comments I received with the submitted logs that the feelings were similar in all parts of the country.

Here now are the results for the contest.

Divisional Scores

Table 1 shows the placing of each division with their overall Improvement Factors.

Table 1: Divisional Ladder

1st	VK7	2.484
2nd	VK3	1.722
3rd	VK5/8	1.072
4th	VK1	0.975
5th	VK4	0.745
6th	VK6	0.667
7th	VK2	0.447

The total scores in both HF and VHF are shown in Table 2.

Table 2: Divisional Scores

Div'n	HF	VHF
VK1	363	245
VK2	3043	20
VK3	2886	21403
VK4	2741	609
VK5/8	4001	1608
VK6	2389	2950
VK7	2039	1962

Calculating the scores

There is some uncertainty and even mystery as to how scores are calculated. To make it all a little clearer, I have included the following live example of how it is done. I will use the VK3 Division's figures in the calculations.

First is the calculation of Benchmarks for VK3 for 1999 RD Contest.

1998 Benchmarks.

(As published in 1997 Results)

HF 4106 **VHF 9602**

1998 Scores.

(As published in 1998 Results)

HF 2775 VHF 3145

Formula:

1999 Benchmark = (0.25 x 1998 Score) + (0.75 x 1998 Benchmark)

Calculations:

HF

1999 Benchmark = (0.25 x 2775) + (0.75 x 4106)

1999 Benchmark = 693.75 + 3079.5

1999 Benchmark = 3773

VHF

1999 Benchmark = (0.25 x 3145) + (0.75 x 9602)

1999 Benchmark = 786.25 + 7201.5

1999 Benchmark = 7988

Those 2 benchmark figures are the scores the division needs to beat to register a positive improvement factor in each section of the contest.

Now to calculate the final score, let's use the points that the VK3 division scored in HF and VHF this year.

Formula:

Improvement Factor = 1999 Points divided by 1999 Benchmark

Calculations:

HF

2886 / 3773 = 0.765

VHF

21403 / 7988 = 2.679

The two improvement factors are now averaged to give the division's final result.

Formula:

Overall Score = (HF Improvement + VHF Improvement) / 2

Calculation:

Overall Score = (0.765 + 2.679) / 2

Overall Score = 3.444 / 2

Overall Score = 1.722

I trust that takes some of the mystery out of the RD Contest results.

Here now, are the Benchmark figures for the year 2000, the final RD Contest for this millennium.

Table 3: 2000 Benchmarks

Div'n	HF	VHF
VK1	626	189
VK2	4339	64
VK3	3551	11342
VK4	3439	767
VK5/8	3747	1551
VK6	2845	4864
VK7	1856	875

Individual Scores

The individual scores for entrants are listed at right..

Certificate winners are denoted by an asterisk (*) and the top Australian scores in each section by a hash (#).

Certificates will be issued to both the top single operator and top multi-operator stations in each division.

This year we had just one overseas entrant, ZL3TX who scored 43 points in the HF Phone section. I'll endeavour to get a bit more publicity for the contest in ZL so that we may enjoy more activity from there next year.

That's it for 1999. Let's all look forward to RD 2000 and decide what sort of effort we can make to help win the trophy for our division. The opportunity is there for any division to win.

73, Alek. VK6APK

Individual scores

State by state

VK1

HF Phone

VP	160*
EY	108
DW	50
KMA	45

VHF Phone

VP	54*
EY	37
HS	32
RG	32
7RG/1	32
DW	31
KMA	27

VK2

HF Phone

XN	443*
DCL	257*
XT	152
BDT	133
APP	126
AGE	101
HV	87
ALZ	62
NNN	57
FUP	48
IRP	46
EJK	23
SW	18
YW	18
CF	15
MV	14
EMU	11
VIM	3

HF CW

BHO	208*
OI	164
EL	156
PH	138
QF	138
AZR	110
II	52
RJ	28

HF Open

BO	435*

VHF Phone

SW	11*
HV	9

SWL

I McGovern	111*#

VK3

HF Phone

IO	401*
AHY	158
GUS	154*
OM	150
DS	110
ABP	90
JK	81
KQB	79
DBL	73
EX	72
NM	71
AMW	53
KTO	50
BWT	49
CAT	47
CAY	47
DCP	39
SM	39
FT	35
MMM	35
APC	31
DY	30
EWM	30
JNB	28
ADW	27
DKT/4	26
KKJ	26
UU	25
KB	22
AOY	20
DYL	20
NV	18
AAJ	15
DYF	15
DI	13
MGZ	12
AEO	10
SB	9

HF CW

SV	138*
ANJ	94
AMD	62
BKU	28
JI	24

HF Open

DID	165*
PP	70
YE	61
FR	34

VHF Phone

BJM	546*#
MZ	500
DI	292
DBQ	274
KTO	270
JED	268
GK	250
JK	250
YE	248
KKJ	234
TTX	218
AYF	200
VNA	186
CAT	165
KBD	160
XJU	160
GV	145
FT	138
APC	107*
JTW	105
CAM	100
HIQ	95
XBA	79
NE	67
WI	65
HEH	61
HGF	61
ABL	60
BYY	60
DYL	53
XV	53
ER	51
KB	50
ZBI	50
US	47
JNB	47
DID	45
JNH	41
PC	39
SM	37
EWM	35
BGS	25
ATW	23
VKC	22
ZPP	20
XX	17
AEO	10
BWT	2
KQB	1

VHF CW

TAY	446*#
VT	444
BGW	442
CNE	378*
EA	360
ERG	360
FII	360
HDD	360
DXA	358
EMF	358
HAI	358
HFI	356
HKR	340
HKD	338
VF	338
WT	338
UI	334
VTX	334
HGF	322
ABL	318
KIR	318
AAU	316
AWT	312
AXJ	312
CKH	312
COD	312
DI	312
DUY	310
TCB	226
TEN	190
VFX	170
VKW	168

VHF Open

GUS	1289*#
ACR	545*
ZJH	544
SB	489
DBL	473
NM	473
WWW	370
ZUG	353
AQ	335

VK4

HF Phone

BAY	236*
DO	194
YZ	107
ZJ	100
BTW	80
PF	75
AWL	70
IS	70
BLK	67
ZA	65
AAH	59
PJ	49
GZ	31
PT	31
EWR	29
FU	20
EV	18
WJG	15
VY	11

HF CW

LV	282*#
WID	260*
XA	258
XW	152
LP	64
EMM	46
RE	20

HF Open

LT	198*
IZ	134*

VHF Phone

3CE/4	200*
ZBV	125
NJE	51
ZA	42
RC	37*
AWL	31
TZL	23
EWR	22
PT	20
PJ	18
EV	15
VY	15
BAY	10

VK5/8

HF Phone

ARC	485*#
BWH	244*
BQ	204
8DA	89
WO	86
XY	84
TW	64
EN	62
BWA	58
RV	54
ZK	50
ASN	49
EMI	43
ADD	35
KLD	35
ET	34
NN	33
AIM	30
RK	30
GN	28
PC	26
KMK	23
SFA	23
YX	19
NF	17
ZQ	15
AFZ	12

HF CW

8HA	202*
AGX	126
HO	86
AU	24

HF Open

BRC	590*#
ATU	325*
BAR	298
GZ	221
UE	78
AKQ	64
ZL	29
RG	26

VHF Phone

BRC	404*
EX	257*
AR	201
XY	103
ZKK	89
PC	88
AIM	80
ZBK	63
KCX	62
AVQ	42
AIC	40
GN	36
CTY	31
ZGM	31
RV	26
TTL	20
UE	18
TY	11
YX	6

SWL

G Mutton	72*

VK6

HF Phone

SZ	480*
CSW	225*
BIK	134
SAR	103
JP	101
APK	49
KH	36
WU	31
MIN	28
TS	27
RU	25
AD	21
AR	20
HK	20
DRJ	12
OV	6
KU	5
ANC	4

HF CW

HQ	232*
AFW	186
AF	118
AJ	30
WZ	20

HF Open

VZ	279*
DDX	135
WT	62

VHF Phone

CX	362*
HU	200
SAA	200*
YEI	180
ANC	161
APK	151
AD	146
AR	135
BDO	133
JP	126
SAR	119
4JIP/6	112
ZBP	112
CSW	106
MIN	105
FJA	91
MCB	89
RO	80
NKB	75
XV	68
TS	46
KTN	43
TRA	35
HK	28
WT	20
ZDW	17
AO	10

VK7

HF Phone

RN	330*
CK	221
KC	197
MS	181
RR	139
JGD	138
KH	91
DG	85
BW	82*
KBE	75
KHZ	67
JAB	63
LCW	62
SV	60
NGC	54
LUV	40
RM	40
JP	39
FD	16
BM	14
KK	13
LS	13
AK	11
HX	8

VHF Phone

BW	219*
RR	189*
DG	171
JGD	159
RM	112
EB	94
JK	81
KXA	63
HX	46
NDO	39
SV	34
LS	30
BJ	27
PP	11
JP	2

VHF Open

ZBX	248*
FB	234
HDM	203

Ron Churcher, VK7RN, the VK7 President was visiting Bob VK4KNH when the results came in.
Was he pleased?
Was he what!

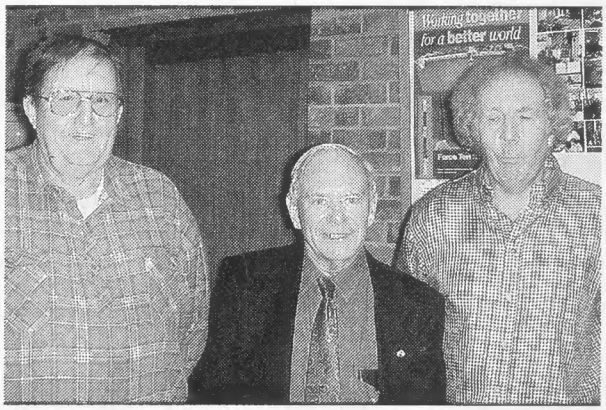
Divisional News

VK7 Notes QRM.

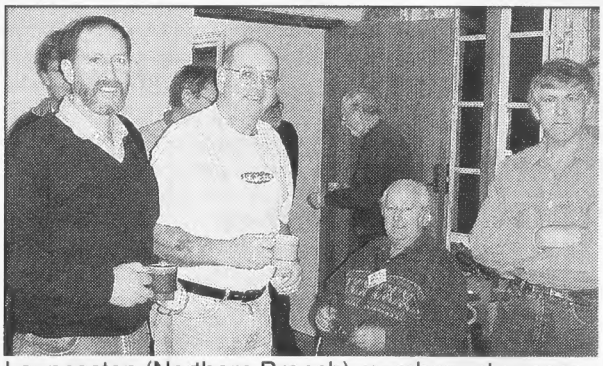
Tasmanian notes.

It has been an absolute pleasure to welcome to Tasmania our Federal President Peter Naish and wife, Monica. Members have been happy to give them our traditional Tasmanian hospitality.

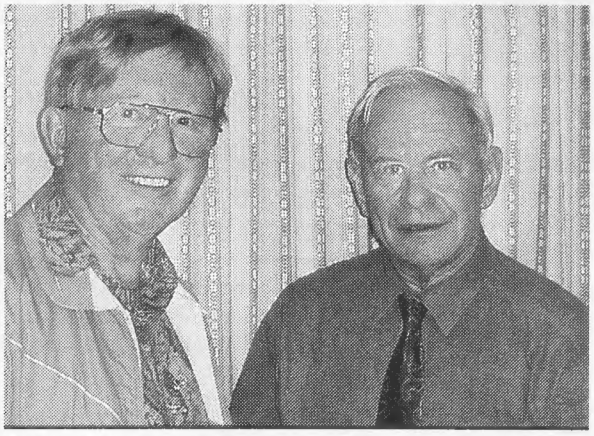
On October 7th the Northern and North-western branches combined to meet him at our traditional "get-together" place Deloraine where the Deloraine amateurs can always be relied on to put on a good supper (a pre-requisite of meetings here!).



Peter Naish with Bob VK7MGW, N/west President and Al VK7AN Northern President



Launceston (Northern Branch) members at supper.



Peter Naish and Ron Churcher.

Peter gave us a very informative report on the state of Amateur radio in Australia and then the Chairman (me) threw the meeting open for questions.

Peter must have done a good job initially because it became a "round-table" discussion with everyone putting their point of view in a cheerful, positive way. The Southern branch in Hobart had their chance on the 11th October. I think Peter was impressed with our members' commitment to our hobby.

Personally I would thank Peter for giving up part of his holiday to meet us. It can only add to the "get-togetherness" we strive for in this Division.

The Southern branch's current big deal is their weekly foxhunt and the competition is really hotting up and getting serious - good-natured open warfare can be fun.

Both the northern and North-western branches are planning their Christmas dinners and at the November meetings will need to finalise their bookings. The Northwest dinner is on the 20th November. I have included some shots of the event. Sorry that Al VK7AN was apparently caught mid-sneeze!

Cheers for now Ron, VK7RN Tas. President.

VK1 Notes

Forward Bias

Peter Kloppenburg VK1CPK

Leonie Tarnawski was the guest speaker at the September general meeting. Leonie is a team member of ACA's Radio-communications Standards Team, where she specialises in Electromagnetic Radiation Regulatory issues.

This subject is of considerable interest to radio amateurs, and users of hand-helds and mobile telephones because of the potential harmful effects of RF radiation at close range. In a chatty manner, Leonie introduced the mandatory standard, based on AS 2772.1 (interim):1998, which came into effect for cellular mobile, cordless phones, and cellular mobile base stations on February 1, 1999.

This mandatory standard includes Specific Absorption Rate (SAR) limits, which apply to devices that have an integral antenna designed to be used close to the human body. The standard also applies power flux density levels (electrical and magnetic field strengths) to antenna installations. She said that the standard currently applies to importers, manufacturers, and installers of that equipment.

The standard does not presently apply to amateurs and the mandatory standard is being progressively introduced over the range of RF services. However, amateurs should be aware of the health implications of emissions from RF transmitters that exceed human exposure limits. For amateurs this means that, for example, an antenna installation fed with a linear amplifier represents a potential health hazard.

The amateur as well as the public is exposed to it. When the mandatory standard is applied to amateur installations, the amateur licensee will be responsible for minimising exposure to the levels designated in the standard.

Leonie explained that compliance with the mandatory standard is related to the power, distance, height of the installation, and duration of exposure. The standard, when promulgated for amateurs and other licensees of RF transmitters, will contain graphs that can be used to calculate compliance of a particular installation with the standard. It was interesting to observe during discussion, the many questions that were asked of her on the issues involved.

As **Education officer of the VK1 Division**, I am facilitating an on-line course on the Internet for Novice and AOCP students in the Canberra and Illawarra regions.

The course was designed and developed by Ron Bertrand, VK2DQ, who has many years of experience in this field. Ron is

facilitating 35 students in Queensland. The course contains 43 readings and 20 assignments that cover the complete Novice and AOCP syllabus, and can be downloaded from his website.

After the fifth assignment, students have a choice of following the Novice or the AOCP strand. The assignments from that point onward reflect that choice. Students work at their own speed and use a facilitator to check and correct their assignments.

At the end of the course, students are ready to apply and sit for the exam in the normal way. When students have a problem with an assignment they can join a keyboard chat-net to exchange views with other students, or the facilitator. Aspiring radio amateurs, Limited call holders, and Listeners in the Canberra and Illawarra regions are encouraged to make inquiries in the first instance at the Ron Bertrand's website.

The address is: http://members.xoom.com/ronber/amateur.html The email address of the VK1 facilitator is: pkloppen@dynamite.com.au Telephone inquiries can be made at (02) 631 1790.

A FAX facility is available at: (02) 6296 5712. Start of the course is the first week of October, and will be on-going.

Cheers to all.

VK6 Notes

Chris Toodyay VK6BIK
(chrismor@avon.net.au)

Are We In VK6, or in Coventry?

What on earth is happening to amateur radio in VK6?

I have to confess I am mystified as to why I can not (easily) get a reply when I put out a general call on either the Perth or local repeaters. Maybe I have upset a few sensitive souls but I don't think so, this lack of response, interest and even consideration, is commonly experienced by the very few that do have the courage (for that is what it seems to take these days) to put out general CQ type calls on repeaters.

I have recently experienced what I can only assume as emphatic rejection, when, after fruitlessly calling on a Perth repeater while mobile, a "ham" calmly called his mate a few seconds after I released the PTT!! How much effort would have been required by this "ham" to just quickly say hello/goodbye to me first?

This sort of offhand treatment, when encountered by a novice making his/her first call with a new rig/licence, is almost certain to quickly result in another "lost" ham, and a further major blow to the survival of our hobby. In my view, each "potentially active" amateur "lost" is worth 30 of the licensed hand-sitters.

Another example. About 15 mins before the Sunday Broadcast, a country ham put out an "emergency" type call on what he assumed would be the most monitored repeater at this time. Storms had knocked out the telephone system, and he requested for someone in Perth to make a local telephone call on his behalf. There was no response at all to numerous desperate appeals.

He had to QSY and call on another accessible (but very quiet) repeater before finally getting a response and help from an OT still imbued with "the spirit" (well done Percy).

If memory serves correctly, doesn't the "Ham Code" call for us to be "considerate" and "helpful to our fellow hams"? I think it does, and so I make it a principle to ALWAYS respond to ANYONE I hear putting out a call for a (maybe first?) QSO on air, on any band. Please, if you hear someone put out a call seeking a contact, respond, even if only briefly, for the sake of the hobby.

Activity

Further on the theme of general amateur activity, here are some words of wisdom on the subject, borrowed from Richard, VK2SKY; (very nicely put I thought)

"If you want to help the hobby of Amateur Radio to thrive, all you have to do is:

1) enjoy your hobby
2) be active
3) do something a little out of the ordinary, and
4) tell others about the fun you've had with Amateur Radio!

After all, Amateur Radio is too good to keep a secret!"

VHF Contest Activity

The next Spring VHF-UHF Field Day will take place from 0400 UTC Saturday November 13 to 0400 UTC Sunday Nov. 14.

The contest manager, John Martin VK3KWA writes; "I hope you will be able to head for the hills for at least part of the Field Day weekend. If you can't manage to mount a full expedition, you might even consider just going for a nice long drive and activating a few grid squares on the way." Sounds like a great excuse to get outside into the country for a bit of hill-topping to that secret spot – the views and fresh air will be terrific, and the grid squares you activate eagerly sought by many "grid-square chasers". You should find the rules published in the contest section in *AR*, or drop me an email and I will forward the same.

By the way, I can recommend "square chasing" – it is highly infectious, as each new square is a challenge and a real high when you land it. It is also great fun to push the distance envelope on VHF/UHF via the different modes of propagation available.

The VK-VHF email reflector (mentioned in previous columns) maintains a "grid square table" published quarterly, and you only need one square to make the list (QSL card confirmations are not req'd). Of course another, longer, opportunity to harvest squares occurs with the upcoming Ross Hull contest.

14 Mary Street Hazelmere WA 5055
Tel: (08) 9274 1118 Fax (08) 9250 3734

Early Opening Across the Bight

Bill, VK6AS in Esperance, reports a very strong tropo opening across the Australian Bight occurring on 25th & 26th Sept. on VHF, at least one month earlier than usual.

The opening first became apparent at about 6:20pm local time (10:20 hrs UTC), when Bill heard the Mt Lofty and Mt Gambier beacons, both at S9+. He called CQ on 144.100 USB & CW for 45 mins, before being compelled to use the landline to alert possible eastern states contacts to the propagation phenomenon.

Obviously we need to encourage more VHF DX'rs to stay within earshot of the calling frequency, and I suggest you keep your VHF shack inside the house, not out by the dunny or chook pens, ok?

Once the word was out, Bill then proceeded to work VK5NC (Trevor nr Mt. Gambier), VK5NY (Roger at McLarenvale nr Adel.), VK5KK, VK5DK, and VK3ZQB, all at very good strength, 5/9+ to 5/9+20. Of note is that VK5KK "repeated" Bill to VK5AKM on 10 Gigs for an interesting cross-band contact. Bill also gave one station (VK5NC?) a 5/9 report on just 1 WATT! The opening lasted at least until 9:40 p.m. (local) when Bill pulled the switch. The following morning, the propagation was still there, although at reduced strength! At +/- 7:00am local, Bill worked VK3ZL on CW at 5/2/9, and then VK5DK on phone again, this time "only" at 5/9. In the meantime the beacons had dropped to S2 – S3, peaking S5.

Bill certainly has the station to make maximum use of such openings, with full legal power into an 8 bay x 16-element long-boom VHF Yagi antenna system, comprising 128 elements in all, and complete with both azimuthal and elevational capabilities.

Bill also uses this system for moonbounce (EME) work. I believe it is the only such VHF antenna system of its type in Australia (I am trying to arrange publication of a picture of this impressive array). Note however that you do not have to have such an antenna to have fun with tropo – a single long boom Yagi, RF amp, and masthead pre-amp will suffice (for a while!).

Of interest is that apparently none of the VK6 beacons were heard during what Bill described as "the strongest opening in years!" It is not known if the opening extended into Perth or Albany. However it may well have, given that perhaps we should not rely completely on beacons as the sole propagation indicators.

There is no substitute for leaving the rig on the calling frequency!

CW Survey

CW Retention/Abolition survey currently under way. Results so far: - YES (ie. keep in exam) = 111, NO (ie. not to retain the code as an exam requirement) = 127. I voted no. Have you voted? Meanwhile, all you retentionists, lets be hearing at least one of you on the bottom end of 80 metres weekday evenings – I am trying to brush up my CW for VHF DX'ing !!

Hamfest '99

Don't forget there is a Hamfest coming up in November sponsored by the NCRG, same place/time, in Bassendean – I have not been given any details but I guess most would expect to hear of these during the weekly broadcasts.

VK6 WIA "On-Air Net"

Just a reminder, 3rd Tues. every month on 146.750 rptr and 3564 kHz HF, 7:30 p.m. At least let them know you're listening if you can.

From the Minutes **(Oct. Council Meeting)**

Membership: Dave VK6IW presented seven applications for membership. They are: John Cox (VK6NJ), Malcolm Armstrong (VK6YFD), Graham Selley (VK6WR), Gordon McDonald (VK2ZAB), Murray Lang (VK6HL), Bob Worthington (VK6RW), Ruth Worthington (VK1YL), and Tom Blakemore (VK6TB). All were warmly welcomed to the Division.

The matter of a closing date for the Morse Survey was raised. It was agreed that this could conveniently be the day of the Hamfest. Those attending would be able to record their vote at the WIA stand.

John Martin VK3KWA, FTAC Chairman, had advised that the ACA had posted a new "Information Paper" for Amateurs on its web site.

Neil VK6NE has prepared a QSL Bureau instruction sheet for the information of members. It will be inserted in AR Magazine and appear on the Home Page.

The matter of the annual dinner was raised. In view of the lack of support from members last year, no function is planned this year.

73 from Toodyay, Chris VK6BIK (chrismor@avon.net.au)

VK4 Notes

QNews

By Alistair Elrick VK4FTL
WIAQ Councillor and QTC Editor

The Inc is in Ink at last

Last months column just missed announcing the receipt of the Incorporation Certificate for the WIAQ. So we are now the Wireless Institute of Australia Queensland Division Incorporated.

This has closed the chapter on the move from the old non-profit company to a more manageable Incorporated Association. It has been a long 12 months since it was first decided to take the steps necessary to alter the administrative structure of the Division.

There have been many trials and errors made during the legal and administrative procedures to wind up the previous company and create the incorporated body.

During this time, the affairs of the Division have been in limbo, as money was not transferred from one to the other in sufficient time to enable the full business of the Division to continue.

But it is over with and many thanks must go to Peter Harding VK4JPH who started the ball rolling and to David Jones VK4OF who very ably took the reins and followed the entire matter to its successful conclusion. The business of the Division can now proceed as normal and we can look to strengthen the membership and address some of the Amateur Radio issues at hand.

North Queensland Amateur Radio Convention

During September the North Queensland Amateur Radio Convention was held at the James Cook University in Townsville, hosted by the Townsville Amateur Radio Club (Inc). The event was strongly supported by the local Amateur Radio population and from as far afield as Papua New Guinea and VK3.

Local Member of Parliament Peter Lindsay VK4TO officially opened the proceedings on Friday night, extolling the virtues of the 'Bottle' where the 'Catswhisker' ruled supreme and

encouraged everyone to keep the pioneering spirit of Amateur Radio alive.

This was followed by a state of the Spectrum address by ACA area manager Gerry Millward VK4HT highlighting the ever-increasing importance of EMC and EMR along with updates on some of the ongoing issues in the radio spectrum. With Gerry were ACA bods Alvin McCann and Kevin Smith. WIAQ President Col VK4ACG presented Gavin VK4ZZ with the Ken Robertson VK4KT Memorial Award for Technical Excellence, this being in the field of Packet Radio and QNews Rebroadcast techniques.

Other displays of interest were Radio Scouting with Steve VK4SGW and Michael VK4HOT, APRS and RadioDirectionfinding with Ron VK4BRG and Frank VK4CAU, the TARC Inc Club Station VK4WIT, VHF, QNews Rebroadcast, Packet, Internet and HF with Gavin VK4ZZ. There was also a PNGARS Display by Rick P29KFS/VK4KRW and an ALARA display by Sally VK4SHE

Finally there was a Home Brew Contest display managed by Dave VK4FUY and Pat VK4MUY.

WIAQ President Col Gladstone VK4ACG, Bookshop Manager John Stevens VK4AFS and yours truly, journeyed up to attend the function, representing the Divisional Council and displaying the wares of the Bookshop. A display of Amateur Radio equipment was given by local Icom dealer Navcom Electronics and Barry VK4TBD was supported by Duncan VK3LZ, Kiyoshi VK3BZX and Yogushi all from Icom Australia in Melbourne.

Saturday Afternoon, the ladies participated in belly dancing and beading crafts classes whilst the blokes went off to Professor Keith Kikkert's lecture on digital communications using PLCs.

Saturday Night, The Convention Banquet at Compass House. Roger VK4CD did some very good bush ballads and in no time it was Amateur Hour, Vern VK4FVC, David VK4BDJ, Sheila Morrison, Gavin VK4ZZ, Wally VK4DO, Ken VK4HAI and a bellydance exhibition by Lyndall.

So, on Sunday Morning when everyone was still sound asleep, a strange rumbling and clanking, sometimes tinkling noise, was heard through the suburbs. Yes! It was the Convention Treasure Team trucking the tonnes of Equipment Treasure to the Monster Auction Site.

Then it was time for the QNews rebroadcast live from the Uni, which went to air very well. Following was the Car Boot Sale, the WIAQ question and answer session with Col VK4ACG, and then Rick/P29KFS gave a talk at this session, outlining the state of affairs of Amateur Radio in P29.

Wally VK4DO put in a magnificent 3-hour session auctioning off such things as an electric piano, a hifi, radios, computers, BIG VALVES, heavy power supplies and heaps of books. The displays, lectures and discussions spread a wealth of information among the participants. The University facilities made the weekend very enjoyable.

A great deal of thanks must go to the Townsville Club, especially to John Grott VK4MAV the Convention Co-ordinator, for a well run and presented event. The visitors very warmly felt the friendship and friendliness shown and the entertainment at that Saturday night dinner could not only be described as varied but very ably performed by the local talent.

They're saying around Townsville, " See you in 2001 for the 15th NQ Amateur Radio Convention!"

Travelling and on the air.

Allan VK4URD is an amateur who doesn't do things by "small means". Just back from another trip through the outback, Allan and Ellsie with 2 poodles, Shandy and Brendabella shared their vehicle with: -

1 Codan wireless for RFDS: 1 27meg SSB CB radio: 1 2m/70 cm radio: 1 UHF CB (ch 40): 1 mobile phone: 1 6m radio: 1 100ch scanner.

The Ute has a canopy on it with roof rack mounted to it carrying 6m, 2m/70cm-twin-band and scanner ant. On the bullbar he has a 9dB phone antenna. On the glass a half wave UHF CB ant and on the trailer a Codan ant and HF CB whip. The back door has his call sign for 146.500 plus an UHF CB Ch 40 sign and his RFDS call sign VHQ32. If you can't contact him with all that lot, he must be asleep.

73's from Alistair

VK2 Notes

Pat Leeper VK2JPA
patleep@bigpond.com

The Digital Interest Group of Tamworth has become the latest addition to this Division's affiliated clubs, which now total 46 clubs. The next Affiliated Clubs Conference will be on Saturday 13th November and a good representation of clubs is expected. Many matters are dealt with at these conferences, with some major items becoming agenda items for the next Divisional AGM.

The September Trash and Treasure sale pulled a lower than normal crowd as it clashed with the Rugby League final — attendance was down at the previous year's sale for the same reason, so it is becoming a trend. A change of date, perhaps? This could be awkward as the T&T is listed for the last Sunday of every odd month, except when it clashes with a public holiday, and so can be pencilled in to members' diaries in advance. The next T&T will be held at Parramatta on Sunday 28th November.

Recently, a series of training exercises were undertaken in and around Sydney by over 40 ACA personnel consisting mainly of field and technical officers from all parts of Australia.

The exercise consisted of interference investigation and the testing of the command structure for the Olympic Games. According to Mr Vlies, Sydney ACA Manager, the exercises were very successful and he praised the cooperation received from the VK2 Division.

VK2's part in the exercise was to provide interfering signals on the ACA command frequency which the field officers, working in teams of three cars, had to identify and locate.

Mr Vlies extended a special vote of thanks to the Divisional Librarian Aub Topp VK2AXT who made the tower available at his QTH for one of the locations. The transmitter was provided by our Dural team.

Council has decided to hold the Divisional Christmas party on Saturday 11th December, with details to be announced on the VK2 broadcast at a later date.

The early crowd looking for bargains at the September Trash and Treasure

For your diary — the Divisional office will close for the Christmas break at the end of trading on 23rd December and reopen on 10th January 2000.

CLUB NEWS

Remember that the Club News column is the perfect place to share club news with non-members and amateurs in general — and perhaps even pick up a few new members. The first piece is from the Moorabbin club who sound like a really well organised group who have a lot of fun and interesting times. I'm a bit out of their territory but I'll bet they get some interest in their activities.

News from the Moorabbin & District Radio Club

Peter Parker VK3YE
Publicity Officer
Moorabbin & District Radio Club
parkerp@alphalink.com.au
(03) 9569 6751
November 1999

Make the MDRC your club

Did you receive a letter last month inviting you to join the MDRC? If so, you're one of the 300 amateurs lucky enough to live within 10 kilometres of Melbourne's best radio club - the MDRC.

We urge you to strongly consider the benefits of joining the only club that promotes amateur activity in your local area.

The MDRC has the best club rooms in Melbourne. We also have more social, on-air and general meetings than any other club. The weekly APC News service is read throughout Australia. VK3APC, the club callsign is often heard in major Australian contests.

Have we mentioned the club's extensive library, the QSL collection service and the free Internet access.

So there's many reasons to make the MDRC your club. Discover what membership has to offer. Come along to one of our meetings -either Tuesday morning, Tuesday evenings or the first and third Fridays of the month. Further details about the Club appear on our website at http://www.mdrc.org.au.

If you didn't receive a club brochure, perhaps because you're new to the area, or have just gained your amateur licence, give me a call on 9569 6751 (ah) and I'll send one to you.

MDRC 50th Anniversary Dinner

Here's advance notice of this month's dinner to celebrate the MDRC's 50th Anniversary. It will be held on Thursday November 25, starting 7:30pm. The venue will be the Bentleigh Club in Yawla Street. The Club will subsidise financial members who attend. Keep listening to APC News for more information.

Sunsat Popular

Several MDRC members have recently been enjoying interstate and P29/ZL contacts through the Sunsat 2 metre/70 centimetre repeater satellite. Just a handheld transceiver indoors is sufficient to work the satellite for all but the most distant stations. Last month Tony VK3JED even worked stations via Sunsat from a moving tram. Reports on current Sunsat activity are frequently given on APC News.

Radio on Rails

How did you go in last month's Radio on Rails? The final scores aren't yet out, but if the amount of on-air discussion prior to the contest is any guide, it was a great success. More and more Melbourne amateurs are going bus, train and tram mobile, and there's been a big upsurge in activity since the first MDRC Radio on Rails back in April.

Use 146.550 MHz - our club frequency

What is the MDRC's Club frequency? It's 146.550 MHz.

You'll hear the Club Net at 7:30pm on Mondays (run by Tony VK3CAT) and the weekly APC News at 8:00pm Wednesdays. There's also activity from club members and others at other times.

So whenever you're in the shack, in the car or out and about set your rig to 146.550 MHz and keep in touch with your fellow club members.

Gold Coast Hamfest

Saturday, November 13th is the date of the Gold Coast Hamfest on the beautiful Gold Coast in South East Queensland.

Close to Brisbane, the Sunshine Coast, Toowoomba and the Darling Downs and closer to many New South Welshmen than Sydney itself. Why not come and enjoy a weekend away in Australia's premier holiday spot, catch up with old friends and share a story or two.

The venue for the 22nd Hamfest is again at the Albert Waterways Community Centre on the corner of Hooker and Sunshine Boulevards, Broadbeach. Doors will open to the public at 0900 on Saturday 13th November 1999.

If you wish to reserve a table or two, or if you have any queries, please contact (07) 5530 5294, or by packet.

(Keith VK4VQ)

Queensland Digital Group

By way of a Xmas Celebration, South East Queensland amateurs please be aware that the QDG have organised a combined visit of VHF/ATV/QDG/Amateurs visit to BTQ-7 Mt Coot-tha on the 28th November, to be followed by a combined BYO BBQ at the Slaughter Falls afterwards. Interested amateurs and particularly new members are welcome.

Graham VK4BB via Qnews.

Historic Yachtsman

A photograph on page 27 of October 1999 AR shows a gaff-rigged yacht named Kestrel sailing in Port Phillip Bay "around 1930".

Its skipper was known to be Noel Toohey, a notable amateur (but call sign not given). The yacht carried a rather elaborate HF antenna, and may have been one of the first amateur maritime mobiles.

Thanks to some research by Ron Fisher VK3OM into pre-war call-books, we now find that Mr F Noel Toohey's call-sign in 1927 was VK3CX, and he lived at The Crescent, Sandringham.

But by 1930 the call had passed to A.G.Brown of Canterbury, who held it until about 1973. It was re-issued in 1974 to Jim Milway (coincidentally, the Editor's brother-in-law!) who died in 1996. The call has now been re-issued once again.

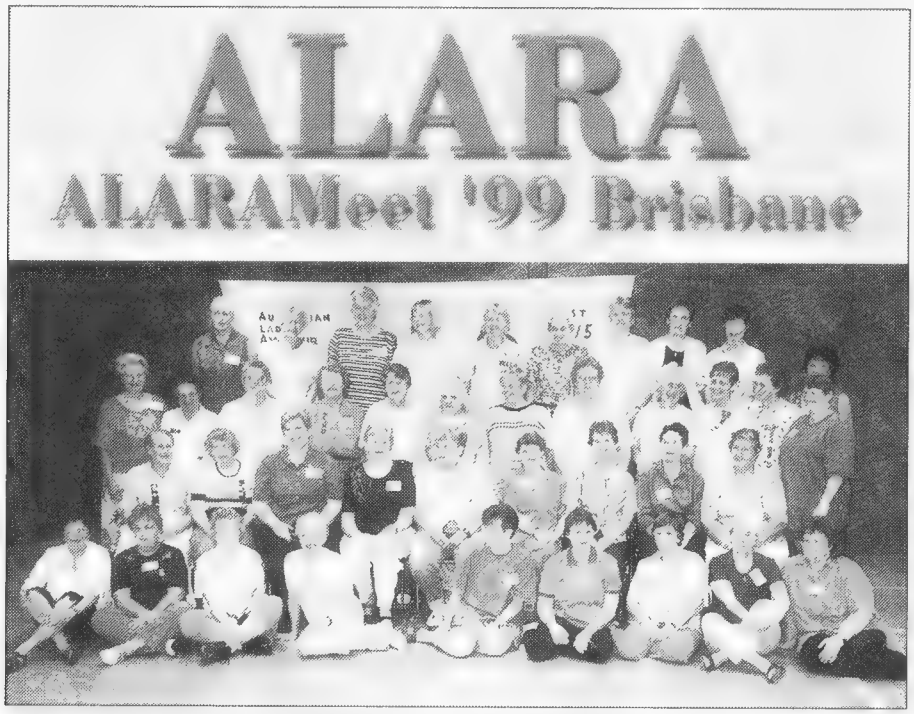
Your Club News

If your radio club has news that is of interest to other amateurs let us know. We have just the spot to publish it.

Women in Radio

ALARA

Christine Taylor VK5CTY
ALARA Publicity Officer
16 Fairmont Avenue
Black Forest 5035
geencee@picknowl.com.au



ALARA Group Photograph from ALARAMeet Brisbane - October 1999

Back row Pam VK3NK, Agnas PA3ADR/VK2GWI, Jean VK5STX, Anne VK4ANN, Sally VK4SHE, Margarette VK4A0E, Jennifer VK5ANW and Helene VK7HD

2nd row Meg VK5YG, Aola ZL1ALE, June VK4SJ, Christine VK5CTY, Elwyn VK2DLT, Elizabeth VK3NEP, Shirley ZL2BPX, Eileen ZL1BRX, Marlene VK3QW, Carol ZL2VQ, Cathy ZL2ADK, Muriel May

3rd row. Marilyn VK3DMS, Gwen VK3DLY, Tina VK5TMC, Judy VK3AGC, Bev VK4NBC, Cecily VK4QW, Melva ZL4IO, Jill ZL2BHJ, Bev VK6DE, Sherry KA5VOP

Front row Pat VK3OZ, Patricia ZL1LD, Allison ZL1TXQ, Robin VK3WX, Mary VK5AMD, Dot VK2DB Celia ZL1ALK Raija SM0HNV, Jill ZL2DBO

Missing from the photo are: Dawn VK2HER and Biny ZL2AZY.

THE ALARAMEET

So much planning and anticipation has been concentrated on this gathering of YLs that a pessimist could have expected it to be a flop. The pessimist would have been completely wrong.

The whole event was an enormous success. Altogether 42 YLs (of which 40 are in the group photo on the front cover) attended with 31 OMs joining in the fun. It has always been said that the OMs have as much fun as the YLs, and this MEET confirmed that. Certainly most of the OMs are also licensed but one without a licence, Murray, OM of Mary VK5AMD, stayed the whole course and enjoyed it all, anyway.

The venue was the Kedron Wavell RSL Community Hall, and for the first time all the activities were held in the same hall. While we had our first get-together, tables were set up in the other part of the hall for lunch, and later that evening we had a formal dinner there, which was all prepared while we were out seeing the sights. This system worked very well as it meant we could move from one part of the hall to the other as necessary.

We even had enough room for the group photos without doing anything worse than borrowing some chairs from around the tables. There were a couple of problems with photographs with one gentleman missing the opportunity of a lifetime - to be surrounded by lovely ladies - and another thinking that he had a 36 shot film after he had been told it was a '35mm' film. That's the trouble with photographers and non-photographers trying to talk the same language. But as is obvious, all the problems were overcome.

There were 25 ZLs, two from the US and one from Finland at the MEET. After the Perth ALARAMEET where there were 13 or 14 ZLs we were warned that there would be more in Brisbane and they lived up to their promise. It was lovely to see them all there and to meet Raija SM0HNV again, whom many of us had met for the first time in Perth. For Sherry (KA5VOP) and Matt (KA5NGO) it was the first visit to Australia, newcomers to Australia were Agnes VK2GWI (ex PA3ADR) and Henk VK2GWK (ex PA0ADC) and Melva VK4TP (ex ZL4IO) and Edwin VK4CYI (ex ZL2AOI), though they have all settled here. For them it was the first ALARAMEET as it was for several of the VKs. Let us hope it will not be the last one.

Although the official beginning of the meet was not till the Saturday morning, over 40 of us sat down to an informal meal on the Friday evening. It was a lot of fun to greet people we have not seen for three years as well as those we see more often. For me it was the first time I had met Sally who was a hard act to follow as ALARA correspondent to AR and it was a surprise to see Raija as I had not known she was coming.

Only Celia ZL1ALK and Geoff ZL1AKY came to the informal dinner as the other New Zealanders had just arrived in Brisbane by plane and had had a meal in flight. They had a snack in another room of "The Crushers Club" instead. As was the case in Perth, Muriel and OM Niel VK3KNM acted as chauffeurs for the ZL group through out the weekend. Those with cars did the same for those who were in Brisbane without transport.

There were two particular innovations this time. All those present were given a certificate of participation and we all took home a copy of the group photograph. Both items will make nice mementos of an enjoyable weekend filled with sightseeing and talk.

ALARAMEETS are not business meetings, they are opportunities for amateurs, particularly YL amateurs, to meet each other face to face and to have some fun together. Gifts are made and sent along to be admired and exchanged. Special craft items that show our interests are put on display on another table. Visitors are welcome to share the happiness we feel at being together.

On Saturday afternoon we were taken by

Women in Radio

bus to the Southbank where we were free to wander among the craft stalls and entertainments of the River Festival. Over the years the export business of Brisbane had moved from the centre of Brisbane to the mouth of the river. This had left many riverside buildings empty.

Visitors to Brisbane for the first time were told of the World Expo held on the site where once there had been wharves and storage sheds. Since the Expo the whole area has been developed into a marvellous open-air boulevard for all to enjoy. If you went to the World Expo or saw images of it on TV you will know what an enormous area was involved in that enterprise. Our visit made it obvious to us, just how close to the centre of Brisbane Expo had been.

On Sunday morning we were taken on the river where our guide told us some of the history of Brisbane and its river. Then in the evening, after the official closing ceremonies, most of us went in buses to Mount Coot-tha to see the city lights surrounding us. After we had had our fill, we were taken again to the river this time to board one of the City Cats (catamarans that constantly carry passengers up and down the winding river) to see the lights from a different perspective.

On Monday many of us went by bus to the shore of Moreton Bay where we were taken by boat out to St Helena Island. St Helena was a terrible prison island used only for the most recalcitrant criminals from the eastern states as well as from other prisons in Queensland.

Two young men, only identified by numbers because this is how prisoners were known, showed us around. The conditions for the prisoners were quite unimaginable to modern eyes. The punishments for what would seem today to be minor infringements of the rules were all graphically described to us by our guides. They also told us of some of the crops grown and the way that even so long ago, the prison was expected to be (and was) self-funded.

The guides demonstrated other skills as we were leaving the island. We were overtaken by a violent storm. We were all drenched right through, as were the guides. Nevertheless they had to go out on the deck in the pouring rain and violent wind to release the mooring ropes. The skill and courage they exhibited was remarkable, as was the captain's control of the ship in very difficult sea and wind conditions.

Introducing

ALARA

The letters stand for Australian Ladies Amateur Radio Association and the organisation specifically represents the interests of the YL (Young Lady) amateurs and the XYLs (wives) of amateurs.

It has affiliations with YL groups in many other countries. The idea of forming a group to promote the interests of women in amateur radio was formulated by Norma VK3AYL, then a university student, after frequently finding herself the odd one out at amateur radio functions.

It has never been just for YL amateurs but has always encouraged women to become amateurs while also encouraging the family members of OM amateurs to become members of ALARA.

In the beginning (as LARA) the members organised foxhunts and car rallies as well as running regular nets on VHF and HF. Right from the earliest days there were members from almost every state in Australia. Quite soon the idea of sponsoring overseas YLs into ALARA was mooted, with reciprocal membership into their organisations. Currently there are over 200 members of which just under half are overseas members.

There is a DX net on 14.222 MHz on Mondays at 0530UTC where you will often hear ALARA YLs talking. Some of the ladies are able to talk this way to the YLs they sponsor and many of them have met each other during overseas tours.

ALARA conducts monthly meetings on air, including the AGM and has a regular HF Net on Mondays. A number of the states also run VHF Nets once or twice a week. All the members receive four Newsletters each year and are kept informed of matters through the ALARA column in Amateur radio.

The ALARA Contest, run over the second weekend in November, puts more emphasis on meeting friends than on exchanging numbers. OM and Club stations are encouraged to participate and when conditions allow DX stations can be heard. Both men and women can apply for the ALARA Award if they work ten YL stations in at least five states of Australia. The ALARA Contest is a good way to hear the more elusive callsign areas.

The YL who scores the most for CW only contacts in the ALARA Contest is awarded the Florence McKenzie Trophy. This is one way of recognising VK2FV the first licensed VK YL and the important part she played teaching Morse Code to a great number of men and women, within the armed services in WWII, and also encouraging all amateurs to use the code.

ALARA has a quarterly newsletter in which news and items of particular interest to YLs is distributed.

In several states there are monthly luncheons and each year ALARA's birthday is celebrated with a luncheon on the fourth Sunday of July and a special chat session on 80 metres on the Saturday night.

Once every three years an ALARAMEET is held where the YLs (and many of their OMs) can meet face to face. By holding these weekends in different states as many as possible of the members of ALARA have a chance to fit faces to the voices they hear on their regular Nets.

For up-to-date news visit ALARA's Homepage on:
http://homepages.tig.com.au/~bishops/al

Jill ZL2DBO, Cathy ZL2ADK, Patricia ZL1LD, Carol ZL2VQ and Biny ZL2AZY.

Once safely on our way back to shore it was a most happy group. We were all absolutely sopping wet (though, remarkably not cold at all) whereas without the storm we would probably have been aware of the hills we had walked up and down and the terrible things we had heard about.

We decided that the storm had ended the ALARAMEET with a bang - of thunder and lightning - rather than with a whimper.

Bev VK4NBC parsing the ALARA banner to Jean VK5TSX as the convener of the next ALARAMEET.

SPECIAL PRESENTATIONS

For Bev VK4NBC who so ably masterminded the meeting there will be an extra memento of the occasion. Bev was presented with a mounted Morse key given in recognition of the achievement in winning the Florence McKenzie Trophy three times. It is possibly that someone will win this trophy three times sometime in the future, but now that the rules allow all YLs to strive for the highest CW score, Bev's achievement in winning it when only a Novice could do so, cannot be repeated.

Dave ZL1AMN, who so ably runs the 222 Net for YLs around the world, received best wishes from all those at the ALARAMEET for his birthday. Dave was presented with a birthday card that had gone around the world to be signed by all his regular Young Ladies. He was quite overcome. That is a birthday card that will always hold a very special place on his "memory wall'.

Just before the end of the official business, as conveners of the event, Jill ZL2DBO, Cathy ZL2ADK, Patricia ZL1LD, Carol ZL2VQ and Biny ZL2AZY

offered a special invitation to us all to come to New Zealand next year for the International YL2000 in Hamilton next October.

To close the ALARAMEET the banner was removed from the wall and presented to the next convener. This year we had to vote for the location of the next MEET as both Murray Bridge and Alice Springs had been suggested. The decision was Adelaide by ten votes so the banner was handed to Jean VK5TSX as the coordinator. She invites all YLs (and their OMs) to join us in Murray Bridge, for the first weekend in October in 2002.

THE ALARA CONTEST

Don't forget the ALARA Contest on 13/14th November. It is the friendly contest, OMs and YLs and clubs all welcome. Remember, too that you can have repeat contacts on the same band now. Read the rules elsewhere in this issue.

ar

Judy VK3AGC and Bev VK4NBC.

A SPECIAL EVENT STATION

On Wednesday 22nd September Dot VK2DB was one of a number of operators who 'manned' a Special Event station from home. They were celebrating the anniversary of the date of the very first Direct Wireless Transmission from Great Britain to Australia.

This transmission was from Wales to Wahroonga, so the station callsign was VK2WAH.

Dot operated on both 21.170 and 28.170 MHz at different times for 12 hours altogether but was disappointed to make only a few contacts.

There are some very special events in the relatively short history of radio transmissions and it is right that we recognise them. It is such a shame that more people do not participate because it makes the task of those who man the stations seem so fruitless.

We know there are always some people out there just listening. Sometimes we even hear them talking to their friends but we cannot persuade them to reply to our calling. If you do hear someone calling for a Special Event station, why not answer him or her? Even if you are not interested in sending for the special QSL card why not let them tell you what the special event was that they are celebrating? Why not learn something new about our great hobby? Think about it next time, please.

ar

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Women in Radio

VK5AMD —A REMARKABLE YL

If you have ever been travelling along the Duke's Highway through Bordertown and put out a call on 2-metres (or maybe on one of the CB channels) the chances are you have spoken to Mary VK5AMD.
Mary monitors 146.500 and has a scanner running as well, all the time. 2-metres is for the pleasure of contacting other amateurs, CB is mostly for the local users she knows or in case there is a call for her help as a very active member of the SES.

MARY has SES qualifications as a rescue person (including from the high places like tops of silos etc) . She has frequently had the unpleasant duty of dealing with some of those horrific car accidents we generally only hear of on the TV News. She doesn't say much but that's not surprising.

She has had an amateur licence for more than 10 years. She got it by sheer hard work, entirely on her own. Her OM is not an amateur and has no skill in that area at all, though he is proud of Mary's achievement and supportive of her activities.

It was her father who introduced her to the world of wireless by showing her all the bits in a radio and explaining them to her. He did have trouble explaining to a child why he called it "wireless" when there obviously were so many wires inside it. Mary decided that an amateur licence would be an asset to a country woman, though her father had always said radio wasn't something for a girl to do.

She saw it as being a useful thing to have particularly in an emergency. So she sent away for the correspondence video program from NSW. She passed the Novice and then the Full Theory with a score of over 90% for both exams. Then she did the Morse and got those, too. If you ask her why she did so well she will tell you it was only because she didn't know how much she had to know to pass the exams. She is a very modest lady.

There is no doubt, Mary puts most of the YLs on the air to shame as far as practising electronics is concerned. She has made her own power supplies.

She makes her own antennas and climbs the tower to install or repair them. She has also made up her own modem kit for packet, -and the list goes on.

When she and her OM come to Town he has a list of tractor or motor parts to collect, she has a list of components to pick up for her next project.

Teaching Sunday-School is an important part of each week and once or twice a year the children in the Kids' Club come to Mary's house for some fun. Sometimes this will be playing in the pool (well, in the dam, really) or using proper climbing gear to climb to the top of her radio tower but sometimes they make something to take home.

Illustrating this article you will see a diagram of a Robot Man or Ginger Bread Man.

He is one of a number of small models she has helped the children to make. Sometimes the Dads are roped in with soldering irons (some of which are REAL farmer-sized ones with 'decent sized' heads) but mostly the models can be made with paperclips as this one can.

The children learn a little electronics as well. They are given a resistor colour chart so the children must identify the right resistor for the right place on the robot - otherwise the robot won't work!!

The circuit diagram is just for our benefit. (Mary keeps a close eye on everything to make sure they do get it right of course, but she makes them think it is all their own doing)

This time the children will take home a robot with flashing eyes. Another time they could have made a bird that goes "Cheep, Cheep" or a rocket ship that sounds real. Mary has a number of small kits and some "Fun with Electronics" type books so she can always come up with a new gizmo. Is it any wonder that these Kids' Club activities are greeted with joy?

Some of these projects are tried out with her own grandchildren (she has 12 of them) so they also have the fun of making something for themselves. The ladies who talk to Mary on the regular ALARA Monday night Net often hear tales of the fun activities she and her "Grandies" get up to. I almost thing I'd like to be a child again to participate.

For Mary, as for a number of others, one of the highlights of her recent radio life was to speak to Andy Thomas on MIR.

For weeks she watched for the times of MIR's passes and slept with her radio set to the right frequency so she would make that contact. She tried from home a couple of times without success, so she decided she'd have to find a higher spot. Three nights in a row Mary jumped out of bed and into the car, driving to a place she knew was higher, and three times she just wasn't heard. On the fourth night Andy did hear her and they had a contact till he disappeared over the horizon.

She was so thrilled about it that she told everyone she met in the street what she had done. Next thing a reporter from the local paper telephoned and asked for an interview.

It made front page!!

Everyone was delighted for her and quite amazed about it. Subsequently Mary was asked to speak at several meetings in the town. You can be sure Mary took the opportunity to tell people about amateur radio itself as well as about talking to MIR. The photograph shows Mary at the Andy Thomas evening arranged in Adelaide by the West Torrens Council.

As well as all her amateur radio and SES activities Mary is a typical busy country-woman. She cooks cakes and biscuits for her family, she preserves an assortment of fruit in season and makes jams and pickles. On Monday nights she often makes our mouths water with tales of raspberries and loganberries from the garden as well as the more usual fruits.

Once a year Mary and her OM spend a week at Victor Harbour as house parents to the whole Sunday School which they love but after which they are so tired they need a holiday to recover.

Quite a remarkable lady.

ar

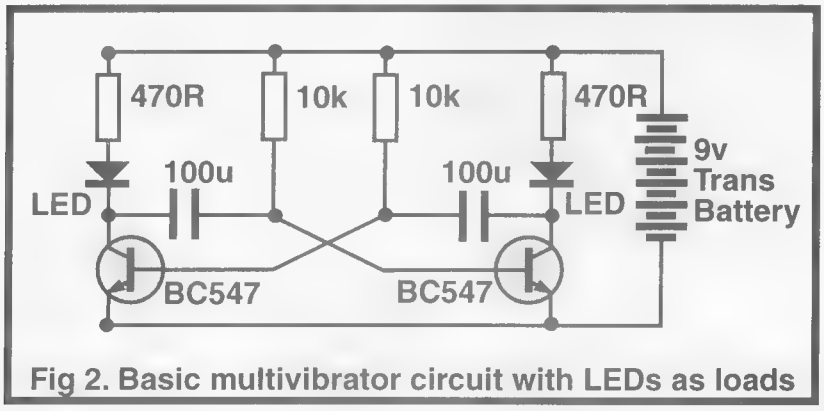

Fig 2. Basic multivibrator circuit with LEDs as loads

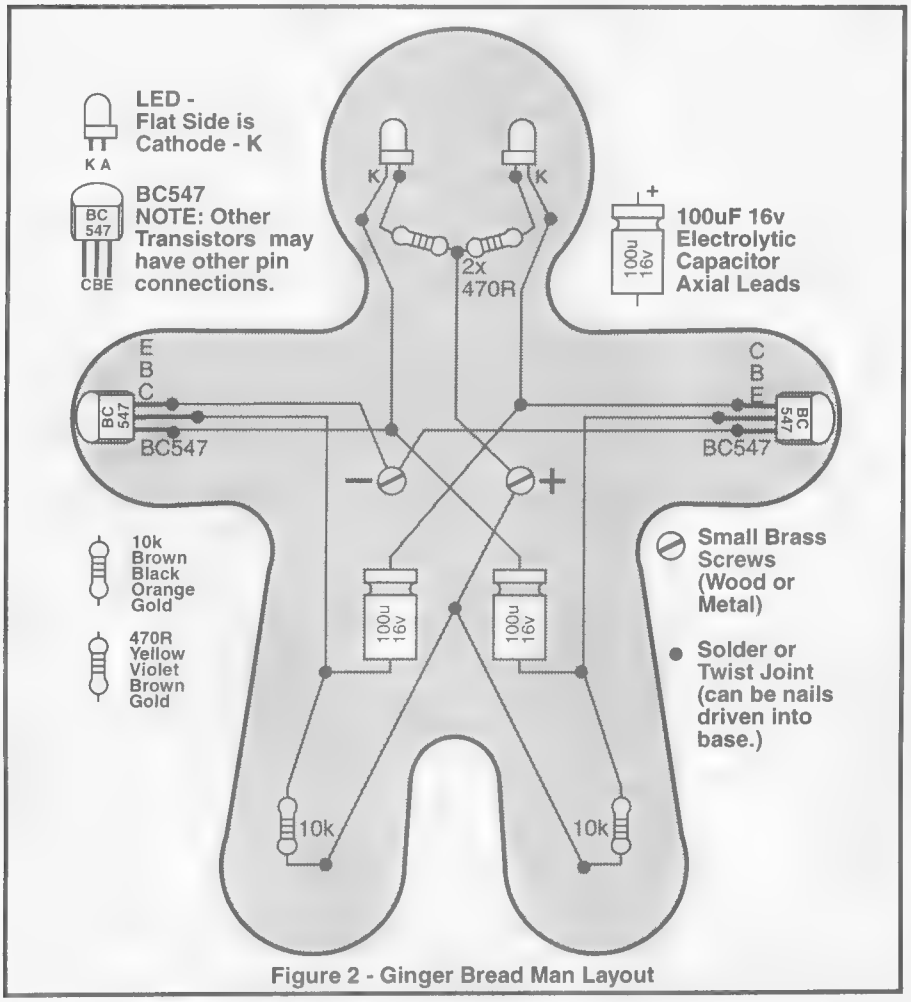

Figure 2 - Ginger Bread Man Layout

ICOM Clearly Ahead

"VK3LZ calling!"

More sound information from your friends at Icom

EVERYONE'S WAITING FOR NEW UNIT FOR RADIO 'PROS'

The end of November is the expected arrival date of an exciting new unit, the IC-756 Pro. As the name implies this is really a professional unit by any standards. Much more than a mere update of the 756, this unit will be loaded with extra goodies for true professional performance. We'll keep you posted on ETA for the IC-756 Pro.

VERSATILE ALL MODE PERFORMER WINNING FRIENDS

Another unit that has attracted loads of interest since its release, and chalked up some pretty impressive sales, is the IC-R75. This versatile receiver offering HF + 6m all mode performance has attracted a legion of fans. As we do the rounds we keep hearing the same comments...'great value', 'loaded with features', 'a versatile performer at the right price'. It seems the IC-R75 keeps winning friends all over Australia.

TWO DAYS TO REMEMBER IN PERTH

Sunday November 7 is the VK6 Hamfest at Bassendean, put on by the Northern Corridor Radio Group.

Saturday December 4 sees an Icom Open Day at Tower Communications in Perth.

"...73"

FreeCall 1800 338 915
290 -294 Albert Street
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ACN 006 092 575

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Women in Radio AWARDS

John Kelleher VK3DP
Federal Awards Officer
4 Brook Crescent, Box Hill South, Vic 3128 (03) 9889 8393

Each year, about this time, I list a number of Awards directed to all our lovely lady operators. Looking around, I find that they form an integral part, and do contribute greatly to the success of most Amateur Radio Clubs.

Here are few samples of YL awards available, taken from a 1997 list.

ALARA
WARO
CLARA
JA series YL
YL-RL series (USA)

ALARA Award - Australia

VK and ZL contact 10 YL members of the Australian Ladies Amateur Radio Association. Contacts must include 5 VK call areas; others contact 5 in 4 call areas. Contacts on or after June 30 1975. Please, no repeater or 'net' contacts. SWL OK. Endorsements for each additional 10 members. DX only 5. GCR list and 7 IRC for basic award; fee for endorsements is A$1.00.

The ALARA Awards custodian is :-

Jean Shaw,
10 Huntingfield Drive
Hoppers Crossing
Victoria 3029 Australia.

WARO Award - New Zealand

General requirements. Contact NZ YLs on any mode or band from the same QTH. No repeaters or contest contacts. GCR list and return postage for return to :-

Jeanne Gilchrist ZL4JG
37 Roy Crescent, Concord,
Dunedin 9006
New Zealand.

HF: ZL and VK work 12 WARO members, DX 6. Contacts from June 1 1969. Endorsement seals for ZL and VKs for each additional 12. DX 6. Contacts with DX members of WARO qualify for endorsements, but applications must contain at least 3 ZL contacts.

VHF: 10 VHF contacts with WARO members from Jan 1 1979. Endorsements for each additional 5.

SWLs: ZL and VK list 20, DX list 10 from Jan 1 1979. Endorsements for each additional 10. (5 for DX).

NZWARO Century Award

Contact 100 NZWARO members (DX members included) from Jun 1 1987. All modes and bands, but each YL claimed must be a financial member at time of contact and may be only counted once. Repeaters, nets and contests are OK. Fee is NZ$2.00.

NZWARO Mountain Buttercup Award

For contacts with licensed NZWARO members, resident, visiting, mobile etc. in the 60 towns named in the official list (SASE/IRC from manager). All modes and bands, but must have been a financial member at time of contact, and within a 25-km radius of the centre of the town named. Repeaters, nets and contests are OK. Contacts after Jan 1 1989. 30 towns/ contacts needed for basic certificate. Stickers for each 5 up to 60. Send SAE and return postage.

CLARA Series - Canada

General requirements; GCR accepted. Apply to

Cathy Hrischenko, VE3GJH,
56 Stockdale Crescent,
Richmond Hill,
Ontario L4C 3S9 Canada.

CLARA Certificate

CLARA members work 12 YL in 6 Canadian call areas (limit 5 VE3); Other YL or OM in Canada work 10 YL in 5 Canadian call areas (limit 4 VE3); DX stations including USA work 5 YL in 3 Canadian call areas (limit 2 VE3). All bands. Contacts after Sept 12 1972. Endorsements available. Fees: VE and USA $3.00, all others $4.00.

CLARA Family Certificate

Families must reside in Canada. Work two or more members of the same family to get family status. They need not reside at the same address. Contacts after Jan 1 1975. Log sheets must show full names and relationships of contacts. You get 1 point for the first member of the family, and 2 points for each additional member worked. Remember that you must work 2 or more from the same family. 22 points are needed to earn the certificate. Endorsements for each additional 22 points. Fees: VE and USA $3, others $4.

CLARA Ten DX Contacts Certificate

Work 10 YL in different countries from the approved DX countries list. Open to all YL and OM. Contacts after Jan 1 1990. Fee is $2.00, and a copy of your log sheet.

YL-DXCC

Work YL in 100 different countries from the approved DX countries list. Open to all YL and OM. Endorsements available for each additional 10 YL countries. Fees: VE and USA $3.00, others $4.00.

Japan Ladies Radio Society Series

General requirements. GCR list and 10 IRC fee applicable for each award. Endorsement fee for YL-10 is 3 IRC for each group of 10 YL contacts. Member list is available from sponsor for SASE. (Ed: Please note that fees may have risen since 1997).

YL- Alphabet Certificate

Contact 26 licensed YL operators. The last letter of their callsigns must represent all 26 letters of the alphabet. No time limitations. Class A for contacts with JRLS members only. Class B for YL anywhere in the world including at least 5 Japanese YL for operators outside Japan. GCR list and 10 IRC to :

Kazuko Isiguro JE2EWW
59-7 Wakinoshima-cho
7-chome Tajimi City
Gifu 507 Japan.

YL-10 Certificate.

Requires 10 confirmed contacts with licensed YL operators worldwide, including at least one Japanese YL. Contacts after Jan 1 1953. Endorsement stickers for each group of 10, though contact with a Japanese YL is not required for endorsements. GCR list and 10 IRC to:

Ayako Inagawa JE3LFH
1-18-11-701 Minamihorie
Nishi-ku Osaka 550
Japan.

YL-CW Certificate

For each of the following 6 awards, GCR list and 10 IRC to :-

Nobuko Nishigori JA3UPR
2-6-11 Hirosedai, Kaai-machi
Kitakatsuragi-gun
Nara-ken 636
Japan.

YL-CW-AJD

Contact a licensed YL in each of the 10 districts of Japan (1 to 0).

YL-CW-WAJA Certificate.

Contact a licensed YL in each of 43 Prefectures of Japan.

YL-CW-JCA Certificate

Contacts with YLs in 10 different Cities in Japan. Endorsements for each group of contacts with 10 additional different cities.

YL-CW-10 Certificate

10 contacts with different licensed YLs anywhere in the world. Endorsements for each group of 10 additional contacts.

YL -CW- Alphabet Certificate

26 contacts with licensed YL operators world-wide. The last letter of their callsigns must represent all 26 letters of the alphabet.

YLRL Series - USA

General requirements.
Contact YLs for a very interesting series of awards. No repeaters. All contacts must be made from the same country. Do not send cards; GCR is encouraged. NO CHARGE for any of the certificates, but sufficient return postage for first class mail or a stamped legal size envelope must accompany the application. The custodian for each award is shown with the appropriate rules.

DX-YL

Available to licensed YL operators only for working 25 different YLs outside your own country after April 1 1958. USA and possessions are counted as separate countries as well as KH6 and KL7. All bands.
Contacts do not have to be with 25 countries, just 25 different DX YLs. GCR list alphabetically by operator's last name. Endorsements for each additional 10 DX YLs. Apply to :-

Phyllis Davis KA1JC
5282 Boyle Terrace, Pt Charlotte, FL 33981
(Oct 10 to July 10)
P.O. Box 1488, Presque Isle, ME 04769 (July 10 to Oct 10)
USA

Worked All Continents - YL

Available to all licensed amateurs. Contact a YL operator in each of the six continents. Cross band contacts are OK. No time restrictions. Apply to :-

Leanna Shaberly KB8RT
2635 West Sunrise Drive,
Phoenix AZ 85041
USA

Worked All States - YL

Available to all amateurs. Contact a licensed YL in each of the 50 USA States. District of Columbia may be counted for Maryland. No time or band limitations. GCR list alphabetically by State, and to include the YLs first name. Apply to :-

Richea Brigance KU5L
RR2 Box 197
Booneville AR 72927
USA.

YL Century Club.

Available to all licensed amateurs. Contact 100 different YL amateurs. All bands. Contacts with YLs anywhere in the world are recognised as long as the stations were operated by licensed women operators. GCR list arranged by last name of operator. Endorsements for each added 50 stations. Gold stickers awarded to applicants who worked their additional contacts from the same country, otherwise Silver stickers will be awarded. Apply to :-

Le Henderson KB6MXH
857 Tamerack Lane
Sunnyvale CA 94086
USA.

YL - DXCC

Available to all amateurs. Contact licensed YL operators from 100 countries as recognised by the ARRL DXCC list. All bands may be used, but no cross-band contacts. GCR list in order of ARRL DXCC countries list including the YLs name. Endorsements for each added 25 DX countries. Apply to :-

Marty Silver NY4H
3118 Eton Road
Raliegh NC 27608
USA

and one for everyone

OMs YLs andFinally -one late arrival:

Slovenian Diabetes Association - SLODA
Dunajska 7, SI-1000 Ljubljana
Tel. +386 (0)61 139 94 20
Fax: +386 (0)61 139 94 25
E-mail: sloda@guest.arnes.si
Radio Club Radomlje S55T
Presernova 34
SI-1235 Radomlje

Following the initiative of Brian Bott, Secretary of the Tauranga Diabetes Society, New Zealand and also Secretary of the Puke Amateur Radio Club, who licensed Special Events Amateur Radio Station ZL6DNZ to celebrate World Diabetes Day November 14, 1999 and will be transmitting around world wide on 14.2 MHz and 7.1 MHz SSB and CW throughout the day.

The Slovenian Diabetes Association, the full Member of the International Diabetes Federation (IDF) and its regional organisation for Europe (IDF/Europe), together with the Slovenian Radio Club announces the first Special Events Amateur Radio Station, S55T, on a country basis to celebrate World Diabetes Day and to increase public awareness of diabetes.

S55T will be transmitting worldwide on November 14, 1999 throughout the day on

10 m: 28.480 MHz SSB, 28.015 MHz CW, 28.085 MHz RTTY

15 m: 21.220 MHz SSB, 21.020 MHz CW, 21.085 MHz RTTY

20 m: 14.220 MHz SSB, 14.020 MHz CW, 14.084 MHz RTTY

40 m: 7.050 MHz SSB, 7.015 MHz CW, 7.035 MHz RTTY

Any licensed radio ham who makes contact with us will receive a special QSL card via QSL Office to confirm celebration of the World Diabetes Day and the communication.

Regards,

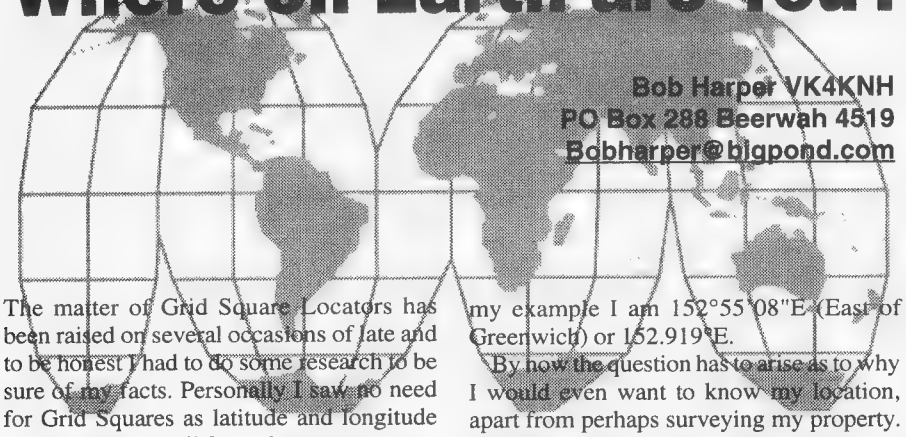
Joze Snoj, S52ZG, President of the Slovenian Diabetes Association, member of the Slovenian Radio Aamateurs Association. Ivo Jereb S57AL, Robert Bajuk S57AW, Vito Kregar S56M – Radioclub Radomlje S55T.

All of the above information is considered to be accurate. In some cases, the fees asked may have changed with time. Good luck and good hunting.

73 de John VK3DP

ar

Where on Earth are You?



Bob Harper VK4KNH
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The matter of Grid Square Locators has been raised on several occasions of late and to be honest I had to do some research to be sure of my facts. Personally I saw no need for Grid Squares as latitude and longitude have served so well for so long.

Take my position as an example 26°51'13"S-152°55'08"E would have you within 30m of my QTH. Some may argue that there is no need to be any closer!

Of course exposure to GPS now has us expecting GPS coordinates of each corner of our property accurate to less than a metre. Do we need it?

Now just in case the idea of Latitude and Longitude are a bit rusty, let's review that concept first. The Earth rotates on its axis giving us two poles, North and South. The midpoint around the Earth, between these poles is the equator that circles the earth. Being a circle, and as the standard already existed, it made sense to divide circles around the Earth into 360°.

Above and below the equator parallel lines (called "parallel"s !) are drawn, which are all lateral lines. Lateral simply means sideways. The distance from the equator is therefore known as Latitude, measured in degrees North or South to determine which side of the equator the point is on. In my case I am 26°51'13"S or twenty six degrees, 51 minutes and 13 seconds south.

Note that a degree is split into sixty minutes and a minute is split into sixty seconds. That worked fine BC (Before Computers) but to keep the programming easy, decimal degrees can be used as well. 26°51'13"S = 26.854°S. One minute of latitude is equal to one nautical mile or 1.852km. Each second is about 31m.

Longitude

Lines of longitude all pass from pole to pole; all that was required was to agree on a suitable starting point. Late last century, about 1884, the prime meridian was defined as the line of longitude passing through the Royal Observatory in Greenwich, England. The prime meridian is taken as 0°Longitude and a location is defined as the angle between the prime meridian and the line of longitude that passes through that point. In my example I am 152°55'08"E (East of Greenwich) or 152.919°E.

By now the question has to arise as to why I would even want to know my location, apart from perhaps surveying my property. In amateur radio there are two possible reasons - to calculate a heading for accurate beam/dish pointing or to calculate a distance for claiming a record or a contest score.

The shortest distance around the Earth, regardless of which direction you head, is called the great circle -assuming the Earth to be a sphere. Purists will note that the Earth is slightly oblate but at the age of Earth that is understandable!

The formulas for calculating both the distance and bearing angle for a great circle passing through an origin to a distant point are not difficult to use but need some explaining and so will be left for another article - perhaps in December.

There are also many programs available on the Internet or through members of your own club that will do the maths for you. All you need is the coordinates of the two locations.

Grid Squares or Maidenhead Locators

Maidenhead (51°32'N 0°44'W) is a town west of London, where a group of European VHF managers met in 1980. At that meeting a system was defined to replace around twenty similar Gridmaps from around the world. The "Maidenhead Locator" used a grid, similar to many of the previous grids, but covered the whole Earth and to a better resolution than its predecessors.

The system uses six characters to define a location. The Earth was divided into grid squares 1° in Latitude by 2° in Longitude indicated by two letters and two numbers. Another two letters were added to refine the system to squares 2.5 by 5 minutes.

A map is probably the easiest way to find your location. Now I know that if I show you the easy way first you'll stop before reading the "less easy" alternative -so I'll give that first.

A Maidenhead Locator or Grid Square looks like - QG63kd.

First 2 Characters - Field

Character one defines longitudinal strips 20° wide, beginning at 180°W with the letter "A". I say 180°W because the system then progresses to the East past 0° and on to 180°E. Each successive strip is identified as "B", "C", "D" etc through to "R" making eighteen strips in all. The east coast of Australia, from 140°E to 160°E, is in the strip identified as "Q".

The second character, also a letter, defines parallel bands of longitude each 10° wide starting at the South Pole and progressing to the North Pole. 90°S to 80°S is defined as "A" and each successive band is "B", "C", "D" etc through to "R". The band that includes Perth, Adelaide and all of Victoria is identified as "F". See Fig 1.

The whole of Victoria and most of NSW is therefore identified as being in the "QF" field.

3rd and 4th Characters - Grid Square Numbers

The "field" is further divided into 100 squares. Each square is 1° by 2° and numbered from the bottom left (SW) corner beginning with 00. If you counted up the first strip, 00, 01, 02 03 etc, then the second 10, 11, 12 etc and so forth you would correctly name each square. Sticking with Victoria as QF, Melbourne would be QF22. (I don't know if the Europeans learn about squares in school but in this plan they're not square! Geodesic trapezoids perhaps???) See Fig 1.

Characters 5 and 6

Each square of each field can be further divided into a grid of smaller "squares", 5 minutes by 2.5 minutes. Again the squares are labelled from the bottom left (SW) corner "aa" to the top right (NE) corner "xx", longitude then latitude. See Fig 1.

The Trap

The longitude is marked east and west of the prime meridian and the latitude is marked north and south of the equator but grid squares are numbered from the bottom left corner regardless or latitude and longitude. Therefore you will need to be careful in calculating your position or in writing a program to do it for you. Fig 1 summarises the scheme and will be useful as long as you know your longitude and latitude.

Using the Map

A map of Australia showing grid squares is provided in Fig 2.

The field designators are shown on the map but the squares are not numbered as it would clutter the map. Instead you will need

to read the square numbers from the edge of the map.

Eg Melbourne is in grid QF in the square read from the bottom as 2- and side as -2 making it QF22. Sydney is also in grid QF, square 5- and -6 making it QF56.

To further define your location you can divide each square into another grid of 24 by 24 identified by the letters "a" - "x", or better still read it off figure 1. You will need to know your longitude and latitude down to the minutes. I my case for example my longitude is 152°55', and 55 minutes is "b", (Note that if my longitude was 153°55' it would then be "w".) My latitude is 26°51' and that makes the sixth designator "d".

So after all of that where am I ? - QG63kd. Personally I still prefer 152°55'E,26°51'S but I haven't been bitten by the Grid Square Collecting bug -yet.

ar

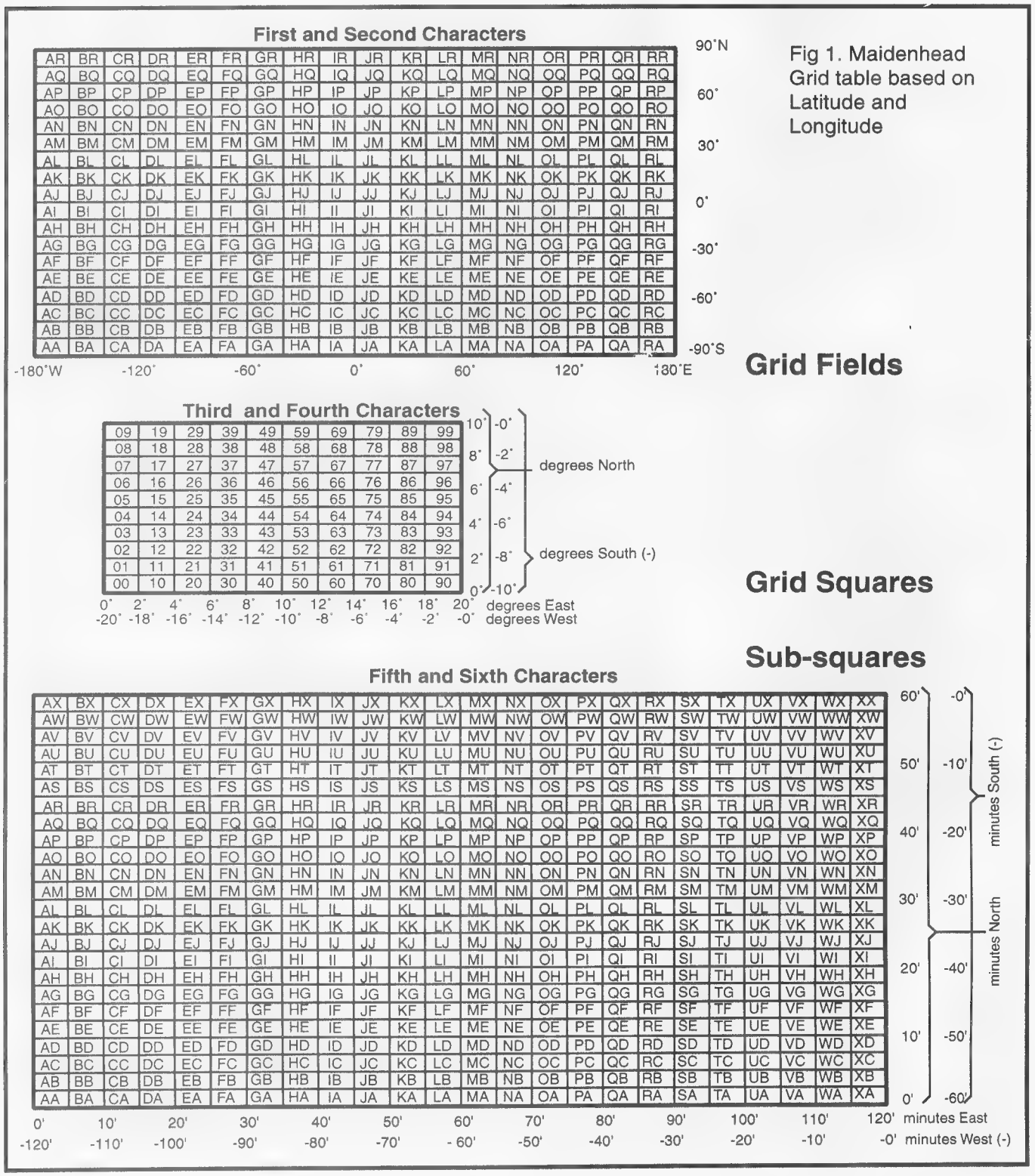
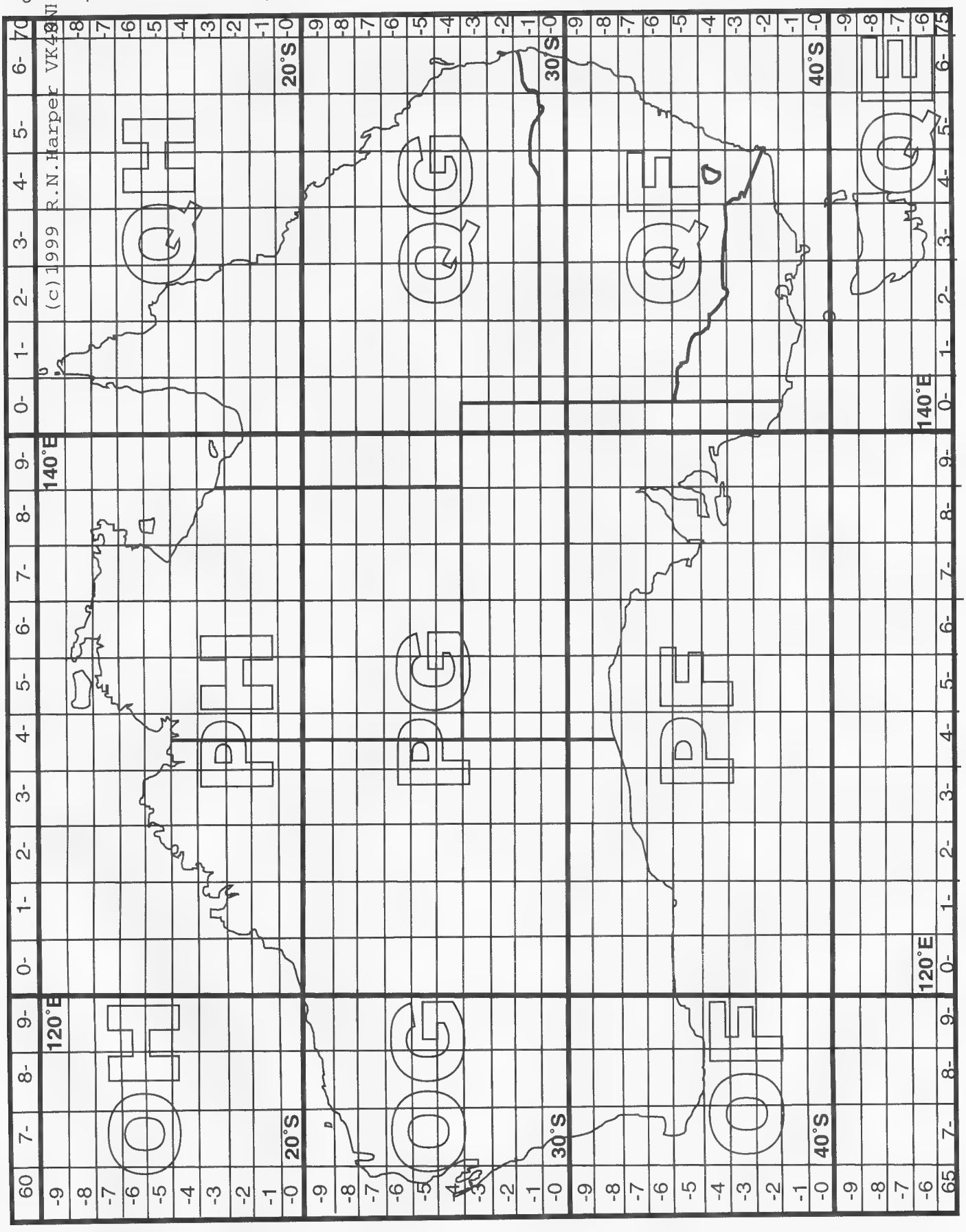

First and Second Characters
AR BR CR DR ER FR GR HR IR JR KR LR MR NR OR PR QR RR
AQ BQ CQ DQ EQ FQ GQ HQ IQ JQ KQ LQ MQ NQ OQ PQ QQ RQ
AP BP CP DP EP FP GP HP IP JP KP LP MP NP OP PP QP RP
AO BO CO DO EO FO GO HO IO JO KO LO MO NO OO PO QO RO
AN BN CN DN EN FN GN HN IN JN KN LN MN NN ON PN QN RN
AM BM CM DM EM FM GM HM IM JM KM LM MM NM OM PM QM RM
AL BL CL DL EL FL GL HL IL JL KL LL ML NL OL PL QL RL
AK BK CK DK EK FK GK HK IK JK KK LK MK NK OK PK QK RK
AJ BJ CJ DJ EJ FJ GJ HJ IJ JJ KJ LJ MJ NJ OJ PJ QJ RJ
AI BI CI DI EI FI GI HI II JI KI LI MI NI OI PI QI RI
AH BH CH DH EH FH GH HH IH JH KH LH MH NH OH PH QH RH
AG BG CG DG EG FG GG HG IG JG KG LG MG NG OG PG QG RG
AF BF CF DF EF FF GF HF IF JF KF LF MF NF OF PF QF RF
AE BE CE DE EE FE GE HE IE JE KE LE ME NE OE PE QE RE
AD BD CD DD ED FD GD HD ID JD KD LD MD ND OD PD QD RD
AC BC CC DC EC FC GC HC IC JC KC LC MC NC OC PC QC RC
AB BB CB DB EB FB GB HB IB JB KB LB MB NB OB PB QB RB
AA BA CA DA EA FA GA HA IA JA KA LA MA NA OA PA QA RA
90°N
60°
30°
0°
-30°
-60°
-90°S
-180°W -120° -60° 0° 60° 120° 180°E
Grid Fields
Third and Fourth Characters
09 19 29 39 49 59 69 79 89 99
08 18 28 38 48 58 68 78 88 98
07 17 27 37 47 57 67 77 87 97
06 16 26 36 46 56 66 76 86 96
05 15 25 35 45 55 65 75 85 95
04 14 24 34 44 54 64 74 84 94
03 13 23 33 43 53 63 73 83 93
02 12 22 32 42 52 62 72 82 92
01 11 21 31 41 51 61 71 81 91
00 10 20 30 40 50 60 70 80 90
10° -0°
8° -2°
degrees North
6° -4°
4° -6°
2° -8°
degrees South (-)
0° -10°
0° 2° 4° 6° 8° 10° 12° 14° 16° 18° 20° degrees East
-20° -18° -16° -14° -12° -10° -8° -6° -4° -2° -0° degrees West
Grid Squares
Sub-squares
Fifth and Sixth Characters
AX BX CX DX EX FX GX HX IX JX KX LX MX NX OX PX QX RX SX TX UX VX WX XX
AW BW CW DW EW FW GW HW IW JW KW LW MW NW OW PW QW RW SW TW UW VW WW XW
AV BV CV DV EV FV GV HV IV JV KV LV MV NV OV PV QV RV SV TV UV VV WV XV
AU BU CU DU EU FU GU HU IU JU KU LU MU NU OU PU QU RU SU TU UU VU WU XU
AT BT CT DT ET FT GT HT IT JT KT LT MT NT OT PT QT RT ST TT UT VT WT XT
AS BS CS DS ES FS GS HS IS JS KS LS MS NS OS PS QS RS SS TS US VS WS XS
AR BR CR DR ER FR GR HR IR JR KR LR MR NR OR PR QR RR SR TR UR VR WR XR
AQ BQ CQ DQ EQ FQ GQ HQ IQ JQ KQ LQ MQ NQ OQ PQ QQ RQ SQ TQ UQ VQ WQ XQ
AP BP CP DP EP FP GP HP IP JP KP LP MP NP OP PP QP RP SP TP UP VP WP XP
AO BO CO DO EO FO GO HO IO JO KO LO MO NO OO PO QO RO SO TO UO VO WO XO
AN BN CN DN EN FN GN HN IN JN KN LN MN NN ON PN QN RN SN TN UN VN WN XN
AM BM CM DM EM FM GM HM IM JM KM LM MM NM OM PM QM RM SM TM UM VM WM XM
AL BL CL DL EL FL GL HL IL JL KL LL ML NL OL PL QL RL SL TL UL VL WL XL
AK BK CK DK EK FK GK HK IK JK KK LK MK NK OK PK QK RK SK TK UK VK WK XK
AJ BJ CJ DJ EJ FJ GJ HJ IJ JJ KJ LJ MJ NJ OJ PJ QJ RJ SJ TJ UJ VJ WJ XJ
AI BI CI DI EI FI GI HI II JI KI LI MI NI OI PI QI RI SI TI UI VI WI XI
AH BH CH DH EH FH GH HH IH JH KH LH MH NH OH PH QH RH SH TH UH VH WH XH
AG BG CG DG EG FG GG HG IG JG KG LG MG NG OG PG QG RG SG TG UG VG WG XG
AF BF CF DF EF FF GF HF IF JF KF LF MF NF OF PF QF RF SF TF UF VF WF XF
AE BE CE DE EE FE GE HE IE JE KE LE ME NE OE PE QE RE SE TE UE VE WE XE
AD BD CD DD ED FD GD HD ID JD KD LD MD ND OD PD QD RD SD TD UD VD WD XD
AC BC CC DC EC FC GC HC IC JC KC LC MC NC OC PC QC RC SC TC UC VC WC XC
AB BB CB DB EB FB GB HB IB JB KB LB MB NB OB PB QB RB SB TB UB VB WB XB
AA BA CA DA EA FA GA HA IA JA KA LA MA NA OA PA QA RA SA TA UA VA WA XA
60' -0'
50' -10'
40' -20'
30' -30'
20' -40'
10' -50'
0' -60'
minutes South (-)
minutes North
0' 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' 110' 120' minutes East
-120' -110' -100' -90' -80' -70' - 60' -50' -40' -30' -20' -10' -0' minutes West (-)

Fig 1. Maidenhead Grid table based on Latitude and Longitude

Fig 2. Map of Australia showing Grid Squares



Stacking Yagis Phasing and Matching

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This is the synopsis of a talk presented to the Sydney VHF DX Group on Tuesday March 16th 1999 by Gordon McDonald VK2ZAB.

When stacking Yagis is being considered the questions which usually arise are :-

(a) What are the reasons for stacking anyway?

(b) Would a bigger Yagi better suit our needs?

(c) If we stack what order of gain increase can we expect?

(d) Is it better to stack vertically or horizontally?

(e) How far apart do we stack the Yagis?

(f) How do we manage the phasing requirements?

(g) How do we manage the matching requirements?

I will endeavour to answer these questions succinctly.

Why We Stack.

We stack Yagis in order to increase the gain over that obtainable from one Yagi and/or to decrease the beamwidth. The increase in gain is due to the reduction in beamwidth and it should be noted that the beamwidth is reduced in the plane of stacking only. If we stack vertically the beamwidth is decreased in the vertical or H plane of a horizontally polarised Yagi. Stacking horizontally results in a narrower beamwidth in the horizontal or E plane of a horizontally polarised Yagi. In some applications, such as interference from or to points off to one side or below the main lobe, the reduction in beam width is a more important consideration than the gain increase. However most people stack to get more gain.

Can We Use A Bigger Yagi Instead?

Yes of course we can. The increase in gain due to stacking two Yagis approaches the limit of 3dB. We will see that this limit is overly optimistic in practice. Nevertheless it is theoretically possible. So how much bigger would we have to make a Yagi in order to increase the gain by 3dB? If you think about it the answer is obviously about twice as big.

Consider Figs 1a and 1b. This is a fairly big 2m Yagi with 13 elements on a six-metre boom. It has a gain of 12.74dBd and a clean pattern. That is a pattern that has low side lobes in relation to the main lobe.

Now look at figs 2a and 2b. This is the same basic Yagi with its boom extended to twelve metres in length, elements added as required and the whole subjected to some optimisation adjustments to clean it up a bit. Note that it too has a clean pattern. Its gain of 15.55dBd is not quite a 3dB increase over the original, but close.

So would you put that up? That boom is 40 feet long. How is your rotator going to stand up to the extra torque when the westerlies hit it? How will your neighbours feel about it hanging over their backyard? No thanks I would rather stack two of the six metre jobs. Still the choice is yours.

Some one may suggest that there are additional feeder losses in the stacked arrangement due to the need to connect two Yagis together. This is true but there is also extra feeder loss due to the need to connect your feeder to the dipole that will be further out from the mast with the single Yagi. There is not much in this argument.

Horizontal Or Vertical Stack?

What is your application? Do you think that it would be better to have a wide beam width in the H plane of your horizontally polarised antenna because you are into meteor scatter? Then stack horizontally. Are you concerned that the power density due to your transmissions is high in your

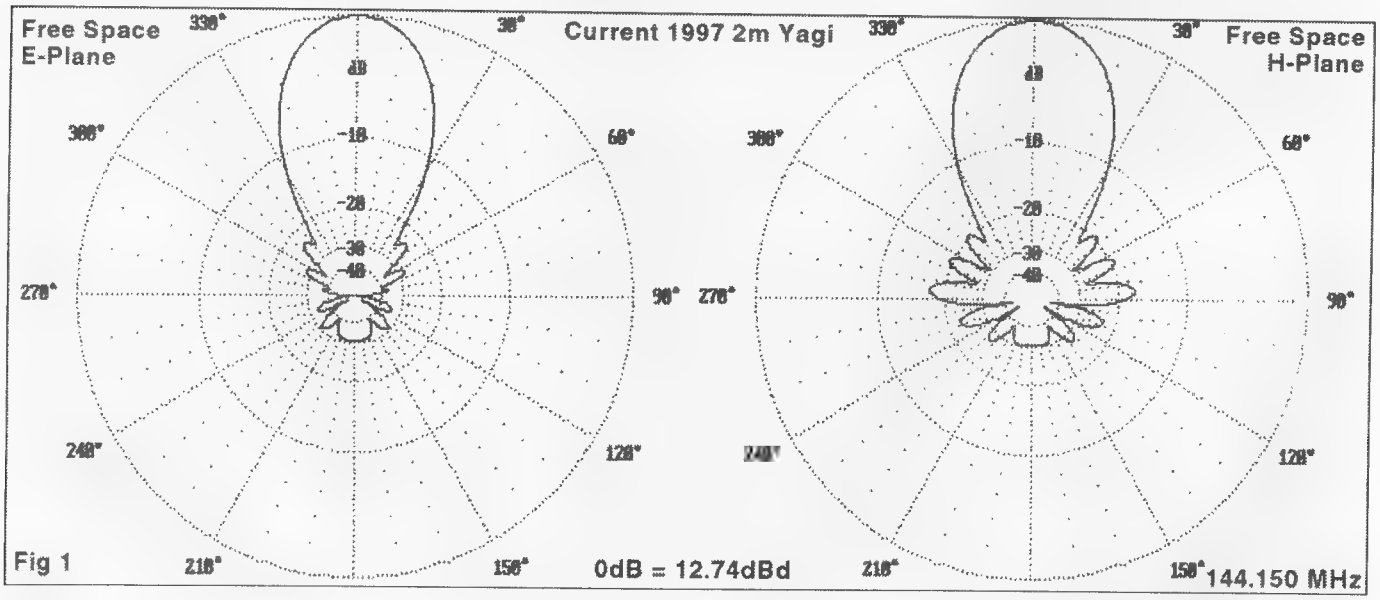

Fig 1

neighbour's kitchen and that it would be better if you had a narrow beam in the H plane? Stack vertically.

Is there a source of noise twenty degrees off to one side of your most used beam heading? Stack your horizontally polarised antennas horizontally. Are you interested in weak signals and want simply more gain? Stack four Yagis two up and two across. Again it's up to you.

However remember that horizontal supports near a horizontally polarised Yagi may give rise to destructive interaction.

How Far Apart Do We Stack?

The old rule of thumb was to stack at two thirds of the boom length. This idea was presumably based on the aim of achieving a 3db increase in gain over one Yagi. Look at Figs 3a and 3b. This is the Yagi of Fig 1 stacked at half and two thirds of the boom length. Note that at half the boom length large lobes have appeared on each side of the main lobe and 14 db down. These are called grating lobes and they are due to the pattern multiplication process so that they appear within the area of the main lobe of a single Yagi. The gain increase is 2.85 dB.

At two-thirds the boom length the gain has increased to slightly more than 3 dB over one Yagi according to the computer and the grating lobes have increased to less than 8 dB down on the main lobe. If you had intended to reduce interference from or to some point off to one side or down from the main lobe this is obviously not going to help much. In fact the pattern has become very dirty.

Digressing a bit:

This idea of a 3dB increase in gain by stacking two Yagis is explained in some texts by invoking the concept of capture area. It is explained that the 3dB gain is obtained when the capture areas do not touch and do not overlap. However this idea does not lead to a stacking distance because although the capture or effective area can be calculated by A = Gain times Wavelength divided by four times Pi, this does not define the shape of the area.

There is no doubt that the capture or effective area idea is very useful in some other aspects of antenna engineering. It is dealt with at length by Kraus in his book

Antennas.

Returning to Fig 3b, note that the main beam width is half that of a single Yagi. This is where the 3dB increase comes from. The beam width in the non-stacked plane (E plane in this case) has not changed.

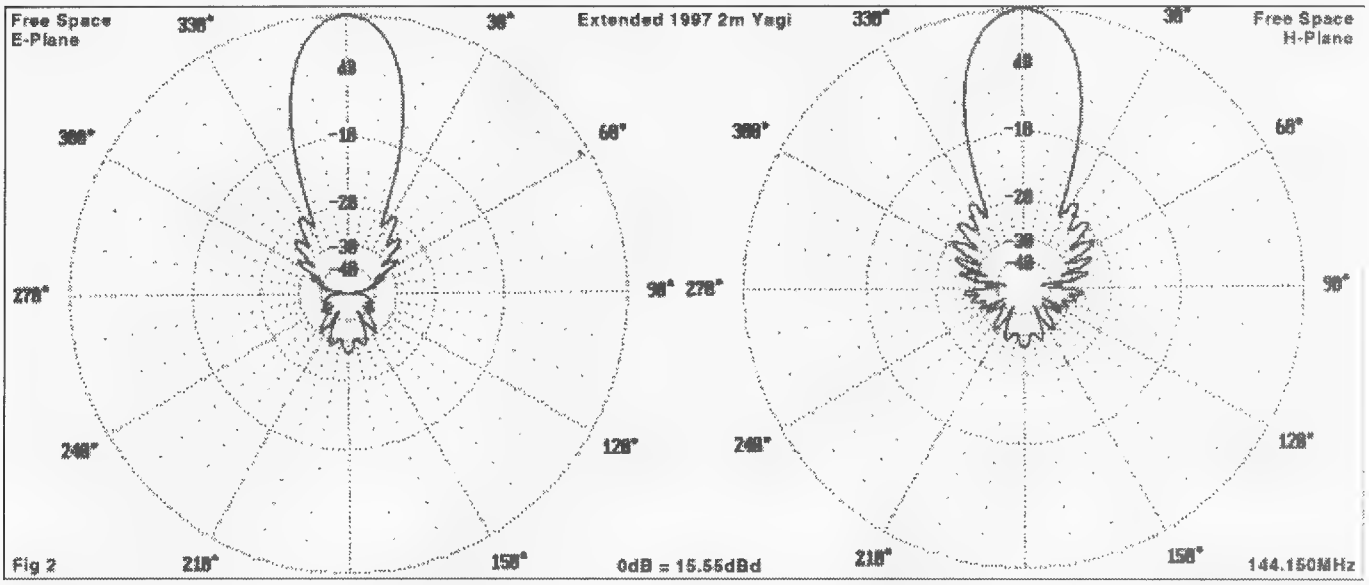

Fig 2

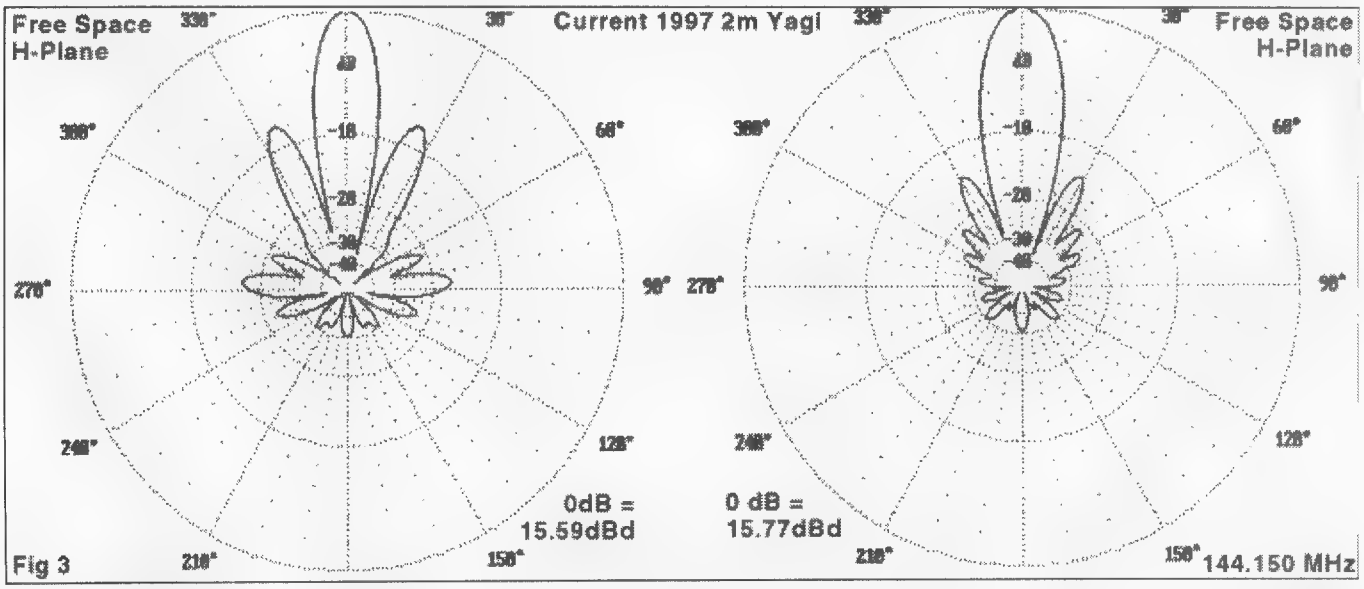

Fig 3

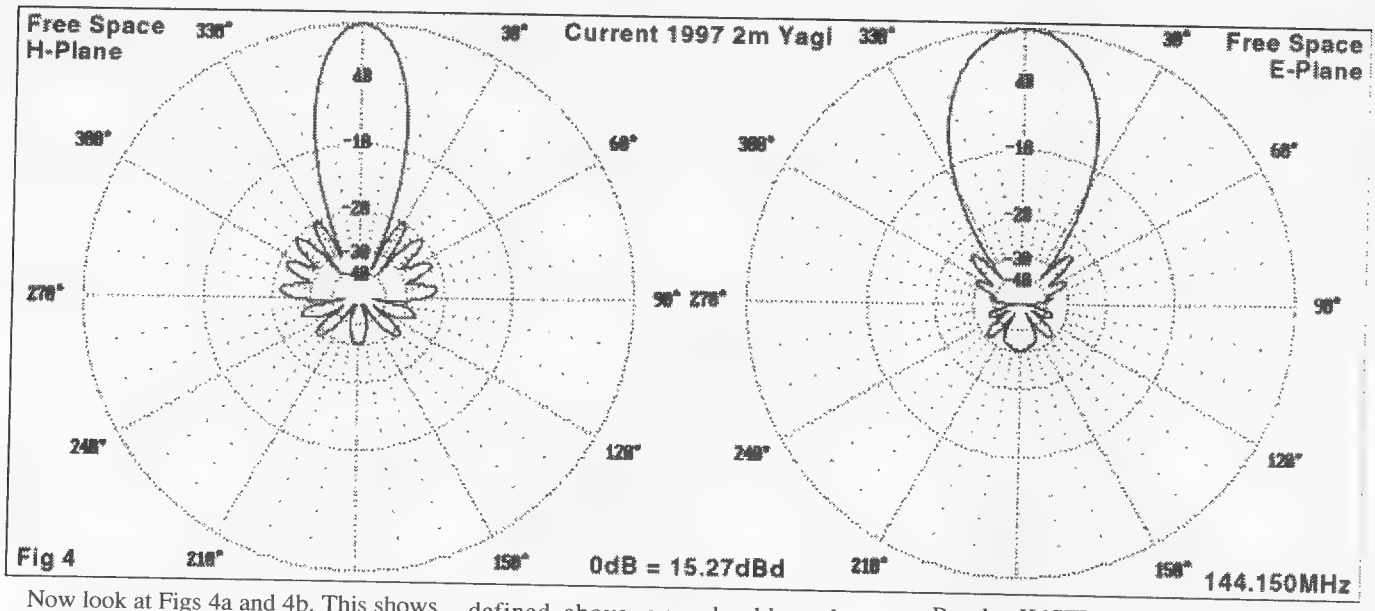

Fig 4

Now look at Figs 4a and 4b. This shows the pattern for the original Yagi stacked at 2.6metres or 1.25wavelengths. Note the clean pattern, -no large grating lobes. The gain increase is slightly more than 2.5 dB over a single Yagi. Most VHF DXers including moonbouncers now agree that this is the way to go. It has a better performance in terms of signal to noise ratio than an arrangement with more gain and a dirty pattern.

So does this mean that we stack all our Yagis at 1.25 wavelengths apart? -certainly not. Remember that the grating lobes are within the area of the main lobe of the single Yagi. So if the single Yagi has a narrower beam to start with we can stack further apart without bringing up large grating lobes. Fig. 5 shows the 12 metre boom Yagi of Figs. 2a and 2b stacked at 4 metres or about two wavelengths.

Recommended Stacking Distance.

As we have seen this is related to the beamwidth of the Yagi you intend to stack. Joe Reisert W1JR reduced this relationship to a simple formula in his articles on Stacking Antennas in the April and May 1985 issues of Ham Radio. He says that providing your Yagi is clean to start with, which means that its side lobes are down more than 18 dB on the main lobe, you should stack at a distance in wavelengths of 57 divided by the 3dB beamwidth in degrees. This will give you a gain increase of more than about 2.8 dB with grating lobes 13 dB down on the main lobe. This is somewhat similar to Fig 3a.

I agree with the formula but I feel that grating lobes only 13 dB down is not good enough so I RECOMMEND that, provided that your Yagi is clean to start with as defined above, you should stack at a distance in wavelengths of 52 divided by the 3dB beamwidth in degrees.

This will give you a gain increase of more than 2.5 dB over a single Yagi and grating lobes that are better than 17 dB down on the main lobe.

How do you determine the 3dB beamwidth of your Yagi? If you are going to buy the Yagis look on the manufacturers data sheet. If this is not supplied, don't buy the product. If you have the Yagi optimiser program YO5, which was used to produce the patterns of our Yagi examples, or YO6 which is an updated version you are in business. (These are supplied by Brian Beezley K6STI)

If you intend to stack Yagis which you made from dimensions in a book you will have to measure the beamwidth by rotating the Yagi while watching the signal level from a test oscillator or beacon. In this case it will be easier if you note the angle between the first nulls each side of the main lobe. The 3dB beamwidth is near enough to half this angle. Of course this only gives you the beamwidth in one plane. E plane if you are horizontally polarised, H plane if you are vertical.

For Yagis with boom lengths of three wavelengths the E plane beamwidth is about 88% of the H plane beamwidth. If the

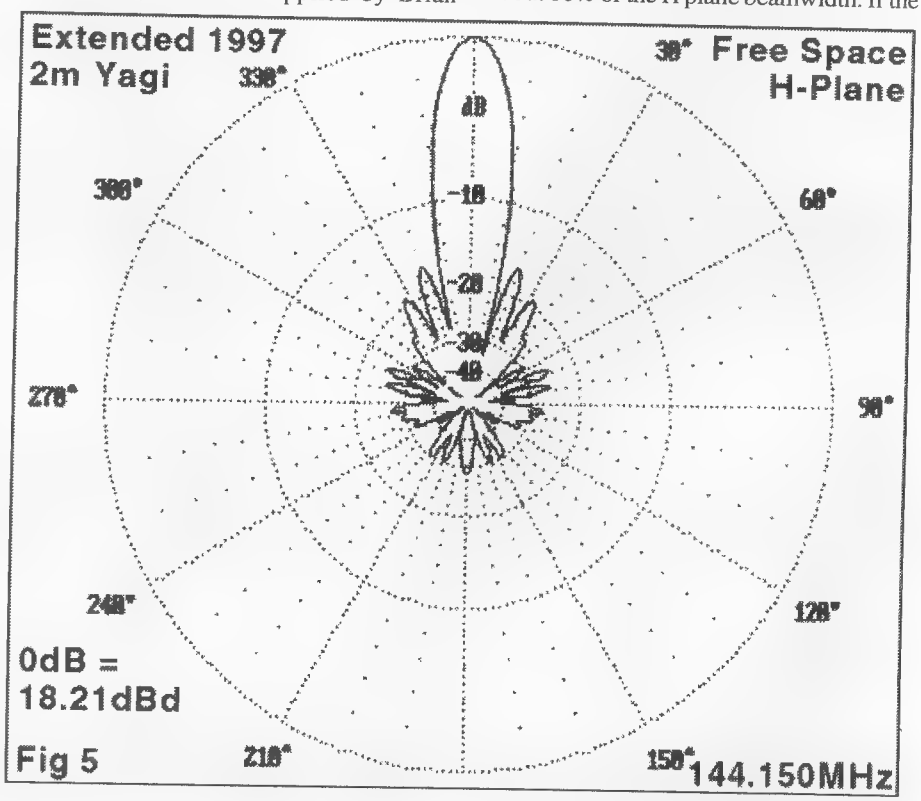

Fig 5

boom is 4 wavelengths E is about 89% of H. If boom is 5 wavelengths E is about 91% of H and if boom is 6 wavelengths E is about 92% of H. This means that the recommended stacking distance is always greater for the E plane than it is for the H plane.

Phasing.

There isn't much to this. It simply means that, looking at the stack as a receiving antenna, signals from all the dipoles must be in phase at the feeder junction to the line to the shack. This in turn means that the left-hand side of all dipoles in the array must be

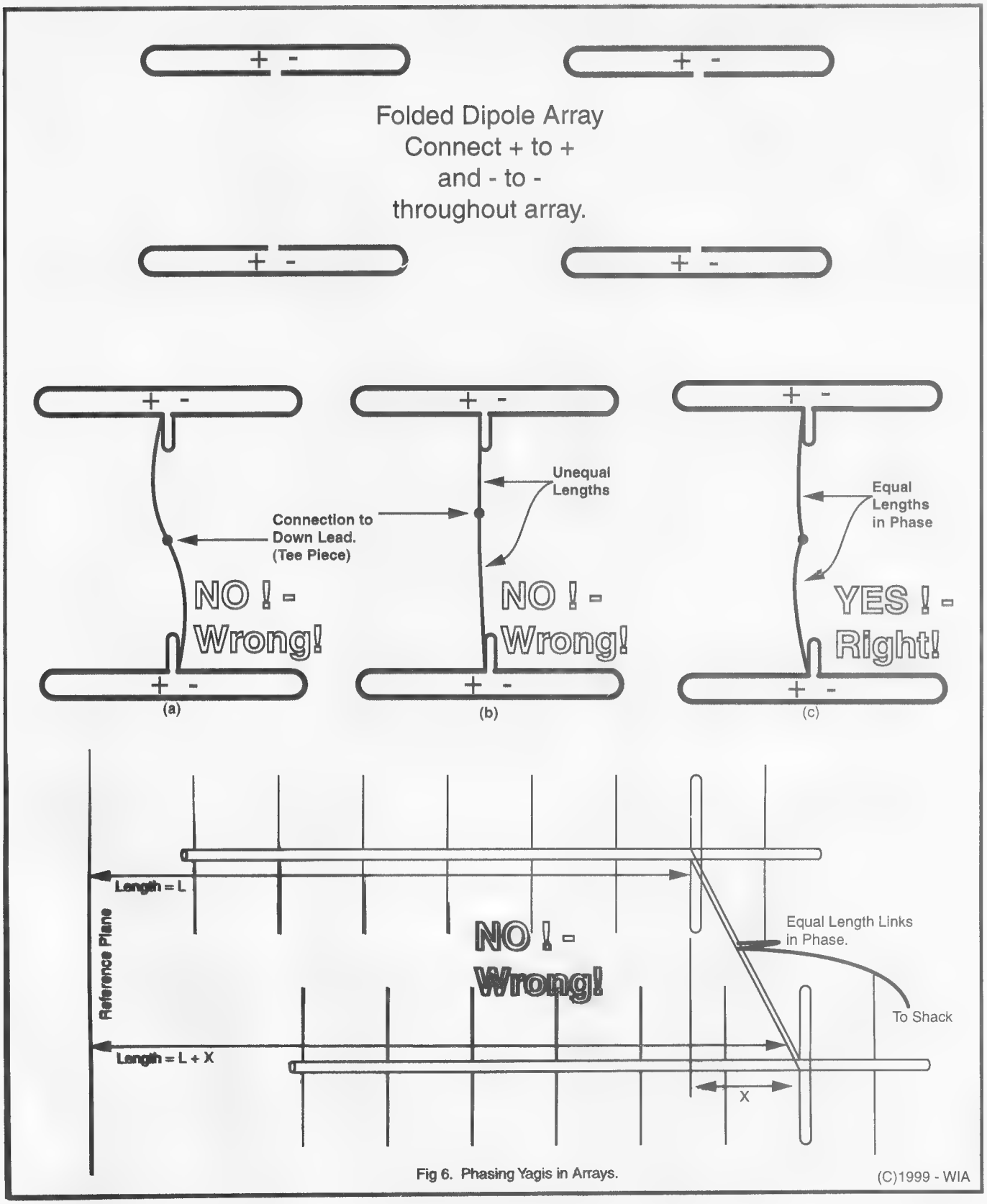

Fig 6. Phasing Yagis in Arrays.

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connected to the left hand side of all other dipoles in the array. The feeders from each dipole must be the same length as the feeders from each other dipole connected to the same junction and the feeders from any sub-junction must be the same length to the main junction as the feeders from any other sub-junction.

It also means that each Yagi must be mounted so that the distance from its phase reference point (the dipole) to a reference plane in front of the array is the same as that of all other Yagis in the array. Departures from these rules are possible for special applications outside the scope of this discussion.

Refer to Fig. 6.

Matching.

There are two categories here. There are those who buy Yagis and those who build them.

Those who buy almost invariably have Yagis with a coax lead attached providing a 50 ohm unbalanced connection to each antenna. This limits the number of options available. Home brewers have an almost unlimited range of possible ways to hook up their stack.

(a) Users of store bought Yagis.

If you are in this category about the only thing you can do is to connect the individual Yagis to the common junction by means of quarter wave matching transformers of such impedance as to transform the 50 ohms of each Yagi to that impedance which is equal to 50 N. Where n is the number of Yagis in the stack. Then of course the parallel impedance of the lot finishes at 50 ohms again to match the line to the shack.

The impedance of the matching transformers is found by the formula Z= the square root of 50 times 50 N. For two Yagis this is 70.71 ohms. For four Yagis this is 100 ohms. For six Yagis this is 122.47 ohms and for eight Yagis this is 141.2 ohms.

These matching transformers are connected to the common connector providing the 50 ohm input/output to the line to the shack in the form of two, four, six, or eight leg power dividers. These are seldom available ready made but are not difficult to make. See Fig 7 for the general idea.

The physical parameters of the air space coaxial matching sections are related to the required impedance by the formula Z=138logD/d. Where D is the inside

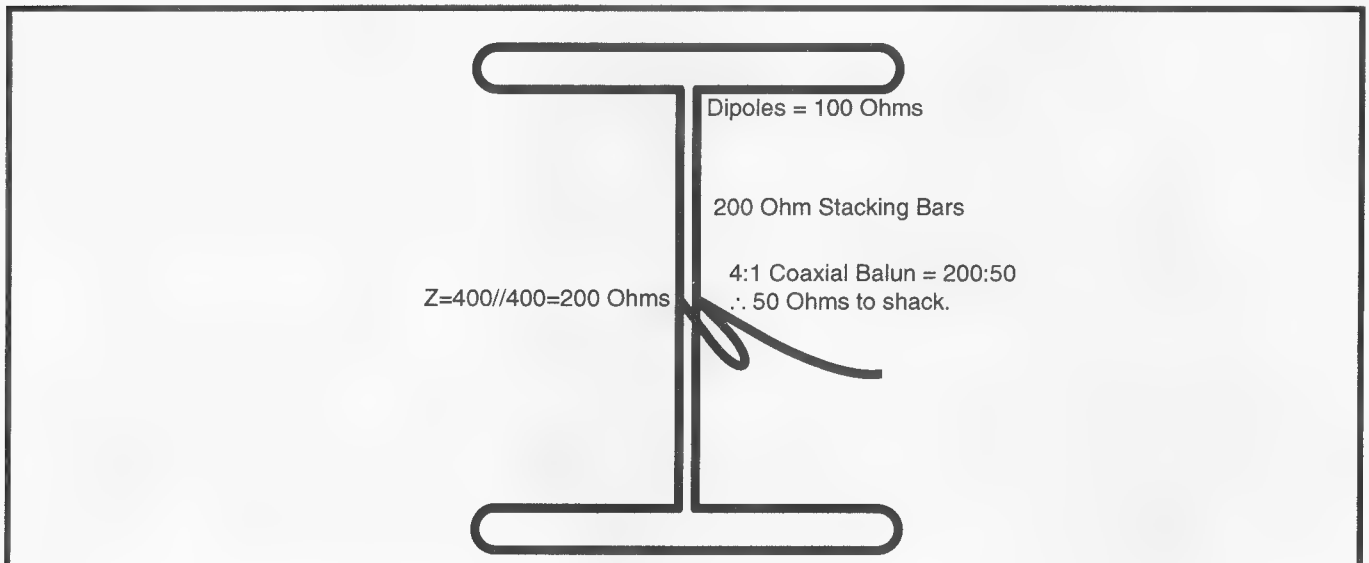

Fig 8a. Stack of Two Yagis

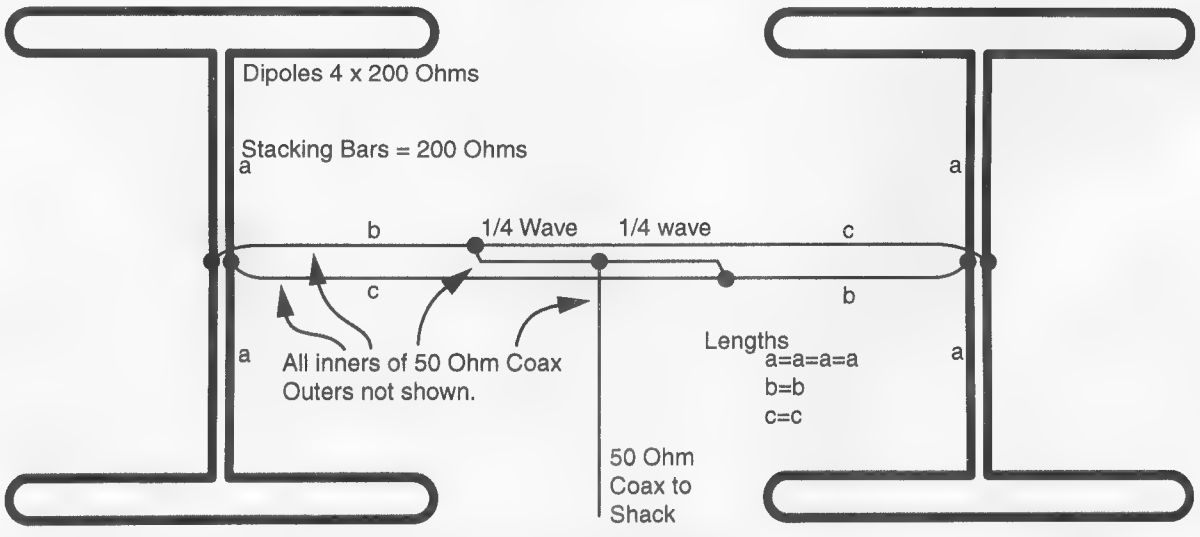

Fig 8b. Stack of Four Yagis

diameter of the outer conductor and d is the diameter of the inner conductor.

(b) Home brewers of Yagis.

There is virtually no limit to the options available and so it is impossible to cover everything. We will therefore limit ourselves to a few examples. For a start you could arrange the connections to your Yagi in the same manner as the store bought examples above and use power dividers in the same manner.

However, home brewers can arrange to have any impedance at the terminals of their dipoles as they like. This is particularly so if the highly recommended, K6STI YO programs are available.

You simply make a folded dipole of such impedance transformation ratio as will bring the straight dipole impedance of your Yagi up to the terminal impedance desired. A two conductor dipole with the two legs the same diameter multiplies the impedance by four times.

A three conductor, same diameters, dipole multiplies by nine times and any other ratio may be fabricated using different conductor sizes for a two conductor dipole. A chart providing a straight-line approximation of conductor sizes for different impedance ratios is in the ARRL Antenna Book.

This freedom of choice facilitates the use of open wire interconnecting lines for your stack. The use of open wire lines is rarely recommended by hams in the northern hemisphere because they have weather conditions which can cause the build up of ice and snow which changes the impedance and loss of lines.

We don't. All we have to worry about is water. Provided our lines are made so that the space between the conductors is not closer than about 6 mm or 1/4" there will be no problem with water bridging the lines.

Properly made open wire lines have less loss than coax. They may be made of aluminium tubing with diameters of 9.5 mm, 6.35 mm, or 4.7 mm with few spacers so that they may also double as boom braces. The loss is related to the spacing, which should not exceed about 1/12 of a wavelength. This means that they are practical up to the 23cm band.

Practical line impedances are therefore between 300 ohms and 150 ohms minimum.

In a stack of horizontally polarised Yagis, it is recommended that the vertical runs of interconnecting lines be of the open wire sort. If this is done with aluminium tubing the lines are referred to as stacking bars. The relationship between the line impedance and the line dimensions is given by Z = 120arc(cosh (D/d)) or approximately by Z = 276 log(2D/d) where D is the centre to centre spacing and d is the diameter of the lines.

Home Brew Stack Examples.

See Fig 8a. This is a stack of two horizontally polarised Yagis. The dipoles are arranged to have terminal impedances of 100 ohms each. This is transformed to 400 ohms at the junction of stacking bars each 3/4 wavelength long and which may double as boom braces by having the central terminal block mounted on the mast.
The two 400 ohms in parallel give 200 ohms which is connected to the down lead to the shack via a 4:1 coax balun of the trombone sort.

If we want to stack four Yagis, two alongside two, we could use this arrangement and simply take the 50 ohm coax from one vertical pair of Yagis to a central junction via a two leg power divider to meet the same length of 50 ohm coax from the other vertical pair of Yagis.

See Fig. 8b. This is a stack of four Yagis using a series / parallel connection that achieves flat lines, balance to unbalance conversion with minimum losses and uses 50 ohm coax. It is a favourite of mine because it is a VK2ZAB original.

The dipoles are arranged to have terminal impedances of 200 ohms each. The Yagis in each vertically stacked pair are joined by 200 ohm stacking bars of any length. The centre of the stacking bars is therefore 100 ohms balanced.

This point is connected to the 100ohm centre of the stacking bars of the other Yagi pair by 100 ohm shielded transmission line in the form of the inners of two 50 ohm coax lines of any length with their outers bonded together at convenient points such as the ends and junctions. Note that the left-hand side of one set of stacking bars is connected to the right hand side of the other set.

These lines have a T connection at points one quarter wavelength each side of the centre of the horizontal 50 ohm coax lines, one to the right of centre, the other to the left.

The impedances at these T connections is 25 ohms to ground and signals present are in phase and unbalanced to ground. We then join these two points to the downlead to the 50 ohm down lead to the shack via a two-leg power divider of 50 ohms impedance which can of course be coaxial cable. The two 25 ohm points are transformed to 100 ohms each in parallel at the centre of the divider and so present 50 ohms to the down lead connection.

Conclusion

Stacking Yagis provides gain and control over the radiation pattern more readily and with less mechanical strain than can be done with bigger Yagis.
Do it.

ar

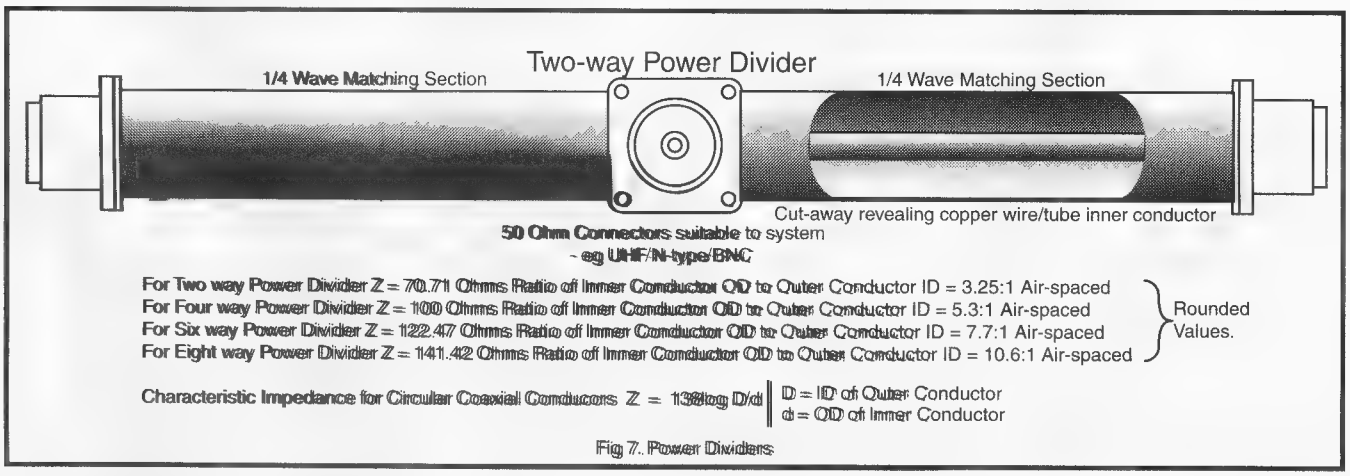
Two-way Power Divider
1/4 Wave Matching Section
1/4 Wave Matching Section
Cut-away revealing copper wire/tube inner conductor
50 Ohm Connectors suitable to system
- eg UHF/N-type/BNC
For Two way Power Divider Z = 70.71 Ohms Ratio of Inner Conductor OD to Outer Conductor ID = 3.25:1 Air-spaced
For Four way Power Divider Z = 100 Ohms Ratio of Inner Conductor OD to Outer Conductor ID = 5.3:1 Air-spaced
For Six way Power Divider Z = 122.47 Ohms Ratio of Inner Conductor OD to Outer Conductor ID = 7.7:1 Air-spaced
For Eight way Power Divider Z = 141.42 Ohms Ratio of Inner Conductor OD to Outer Conductor ID = 10.6:1 Air-spaced
Rounded Values.
Characteristic Impedance for Circular Coaxial Conductors Z = 138log D/d
D = ID of Outer Conductor
d = OD of Inner Conductor

Fig 7. Power Dividers

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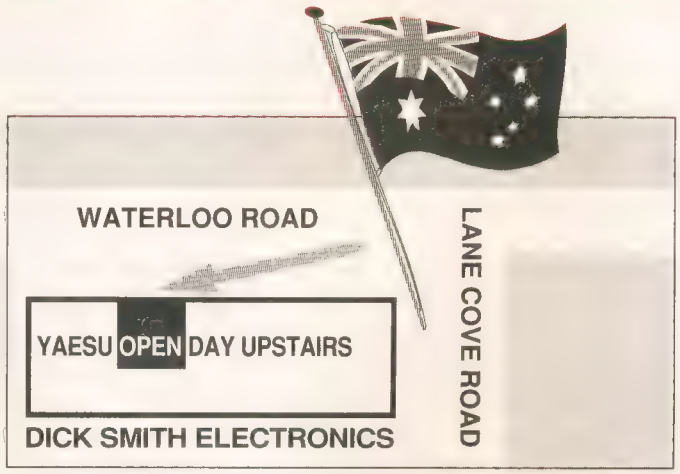

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2m Antenna F-23A

Frequency:	144-148MHz
Gain:	7.8dB
Max. Power:	200W
Length:	4.53m, max wind 40m/s
Type:	3 x 5/8λ
Connector:	SO-239 socket

D 4850

$199 SAVE $50

23cm F-1230A

Frequency:	1260-1300MHz
Gain:	13.5dBi
Max. Power:	100W
Length:	3.06m
Type:	25 x 1/2λ
Connector:	N-type socket

D 4870

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The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1kW (PEP) power handling. Wide-band coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, <2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at 2:1 SWR. An optional 30m resonator kit can be installed without affecting operation of other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

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FT-2500M 2m Heavy-Duty Transceiver

Built tough to take the rough stuff, the Yaesu FT-2500M meets US MIL-STD 810C for shock and vibration so it'll provide years of reliable mobile operation. Its easy-to-operate front panel design, rubber coated knobs, and large Omni-Glow display are teamed up with a one-piece diecast chassis to set the FT-2500M apart from other 2m mobiles. For improved front-end performance, Yaesu's exclusive 3-stage Advanced Track Tuning feature and dual-FET mixer reduce overloads from strong signals while providing excellent sensitivity and wide-band receive operation.

Also includes:

- 31 tuneable memories
- 7 selectable tuning steps
- MH-26 hand mic, mobile mounting bracket & DC power lead.
- In-built CTCSS encoder
- Various scanning modes

Specifications:

Frequency range:	Tx 144-148MHz, Rx 140-174MHz
Output power:	50W, 25W, 5W
Sensitivity:	better than 0.2uV for 12dB SINAD
Image rejection:	better than 70dB
Max audio output:	2.0W into 8 ohms (10% THD)
Dimensions :	160 x 50 x 180mm (W.H.D)

D 3632

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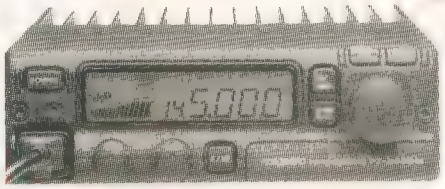

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An RF Attenuator

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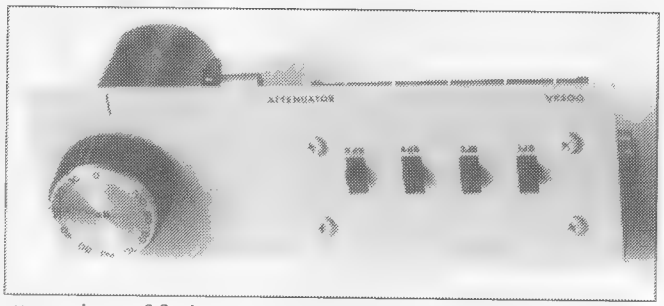


Most RF experimenters know the value of a reliable attenuator. Even old commercial step attenuators such as the Hewlett Packard 355 series still command quite high prices for the amateur on the second hand market.

Many measurements made on receivers, antennas, filters and so on are relative. It is desired to make a response measurement on a device relative to the maximum response or some other reference condition.

For example, if the response of a filter is to be measured, a signal source is fed into the filter and the output monitored on a receiver or other device which may be as simple as a diode detector and moving coil meter. As the frequency of the source is swept over the band of interest, the change in the filter response is indicated on the receiver S-meter or moving coil meter. These are however rarely calibrated.

This is where the attenuator comes in. Inserted in the signal path, it enables the reading on the monitoring device to be held constant as the frequency is changed and so the response of the piece of gear being measured can be determined.

Similarly, if you want to measure the polar pattern of that new antenna, set up a source which may be an oscillator or low power transmitter into any antenna some few wavelengths away and feed the output of the antenna under test into a receiver via an attenuator. Turn the test antenna to give maximum reading and adjust the attenuator to put the reading mid-scale so you know the indicator is not saturating. Then the antenna is rotated step by step and the attenuator adjusted at each step to hold the reading constant.

See that you have plenty of attenuation in when the antenna is on boresight so that when you turn the antenna you have enough attenuation on hand to get into the nulls in the response. The attenuator setting at each increment of angle of rotation subtracted from the setting at the reference position gives the antenna response in dB.

It is possible for the home constructor to build a quite acceptable step attenuator for use up to 500 MHz. (Ref 1) It might not be as convenient to use as a commercial model but the accuracy of the unit described here makes it quite useable for amateur work. I had obtained a commercial 10 dB per step, attenuator and wanted to improve the resolution to 1 dB. The attenuator I built consists of four pi network sections with attenuations of 8, 4, 2 and 1 dB, giving a total of 15 dB. The sections are switched by low cost DPDT slide switches.

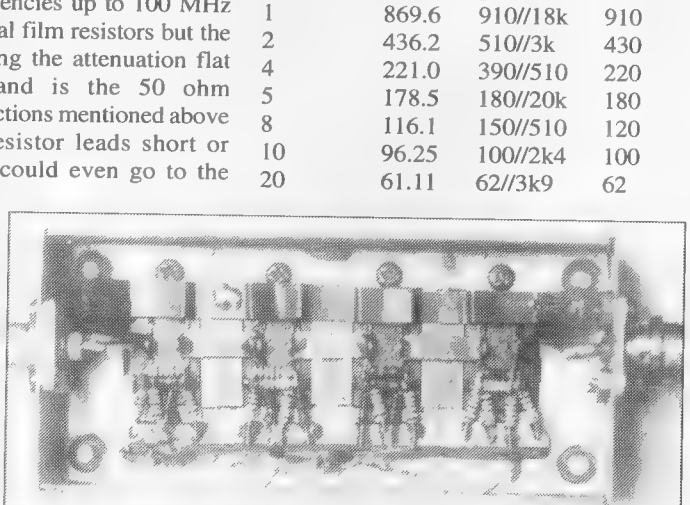
Reference 1 shows it is quite feasible to build an attenuator to 75 dB total, indicating that the secret to getting low insertion loss in the straight through position is to make the connections between sections and to the coax connectors as much like 50 ohm transmission lines as possible. For the 4 sections I achieved 0.4 dB total loss at 500 MHz with all attenuators switched out.

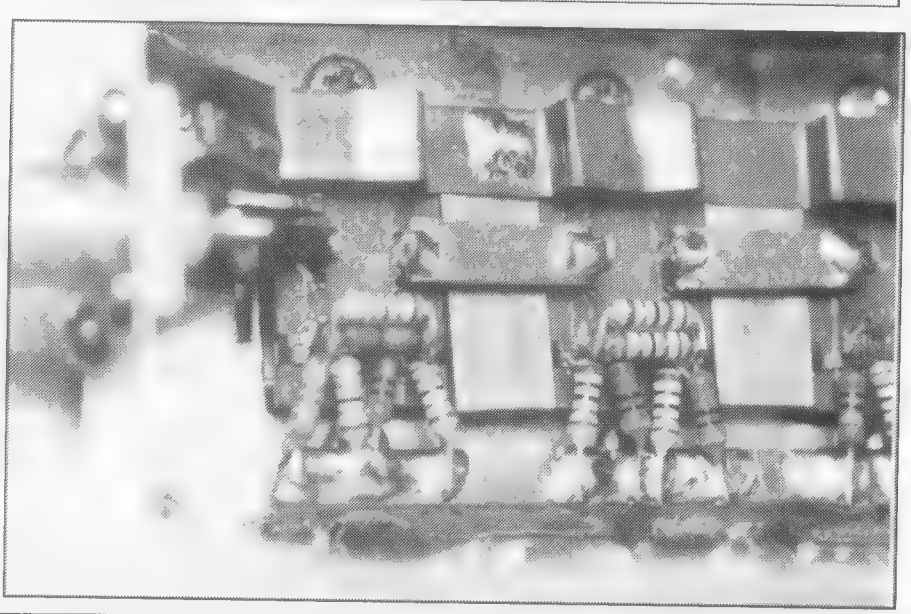
It is fairly easy to obtain an accurate attenuation at frequencies up to 100 MHz or so using 1% metal film resistors but the secret to maintaining the attenuation flat into the UHF band is the 50 ohm transmission line sections mentioned above and making the resistor leads short or non-existent. You could even go to the extent of scraping the fillet of paint away from around the wire on the end of the resistor to enable the soldered connection to be made as close as possible to the resistor end cap.

The simple circuit (Fig 3a) shows one attenuator section, a pi network. Resistor values are given in the following table for attenuator values constructors are likely to require. You can take your pick. The most accurate results will be obtained by using a combination of 2 resistors in parallel for each non-standard value. If less accurate results are satisfactory and they probably are for most amateur applications, the nearest E24 value can be used.

Attenuation (dB)

	R1		
dB	**precise**	**parallel**	**E24**
1	869.6	910//18k	910
2	436.2	510//3k	430
4	221.0	390//510	220
5	178.5	180//20k	180
8	116.1	150//510	120
10	96.25	100//2k4	100
20	61.11	62//3k9	62





Attenuation (dB)

dB	R1 precise	R1 parallel	E24
1	5.77	6.2,82	5.6
2	11.61	15,51	12
4	23.85	24,3k6	22
5	30.40	51,75	30
8	52.84	56,910	51
10	71.15	75,1k3	68
20	247.5	270,2k7	240

Construction

Figures 1 and 2 borrow heavily from reference 1. They show how the slide switches are out in front of the bottom of the box secured by M3 screws and M4 nuts acting as spacers.

The switches are spaced to accommodate a short length of rectangular brass tube, 8 mm by 4 mm in cross section (available from Hobby shops in 300 mm lengths for about $5). The brass tube is sweat soldered to the panel. The brass acts as the ground plane for the transmission line section connecting each pair of attenuator sections.

The active part of the line is a piece of brass or copper shim, I used 0.3mm thick, 8 mm wide spaced off the brass tube 1.6 mm to result in a 50 ohm line. I chose 1.6 mm spacing as it is the thickness of a piece of fibreglass PCB blank that I used as a spacer while soldering the copper strips in place.

The width of the strip is the calculated from the approximate formula for the impedance of a microstrip transmission line in air : $Z_0 = 112+(H/W)$

where : H is the spacing of the line from the ground-plane and W is the width of the line.

I used a tin-plate box as a housing but copper, brass or galvanised iron or blank PCB laminate would do. The photos show the unit mounted on a panel along with the commercial 10dB step attenuator, a Texscan model RA-100. I used BNC coax connectors but any type could be fitted, even SO239's if you must.

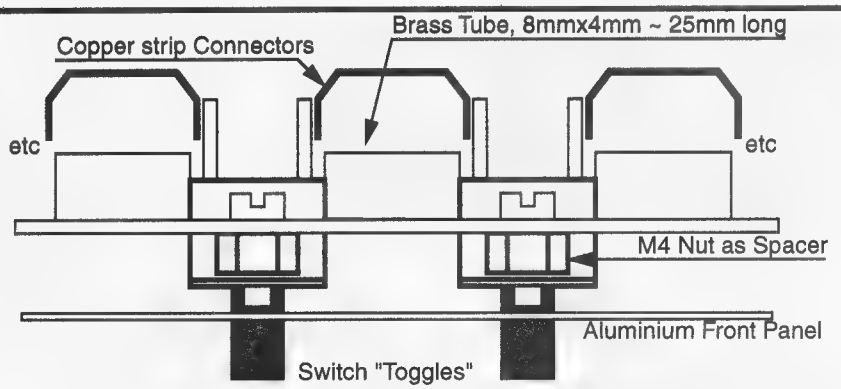


Fig 1. Arrangement of Switch "Common" terminals - end on view to switches.

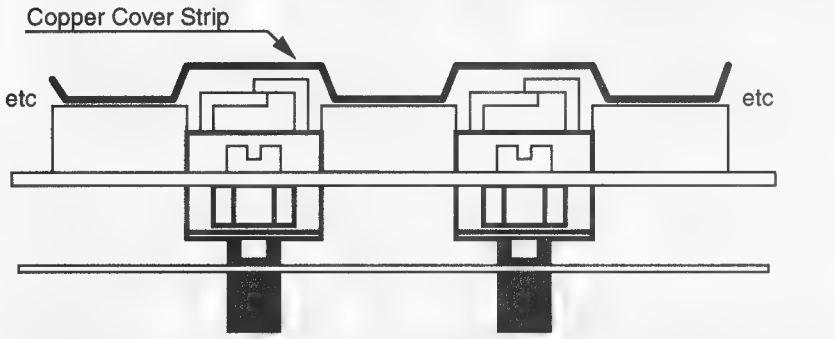


Fig 2. Arrangement of Switch "Shorting" terminals - end on view to switches.

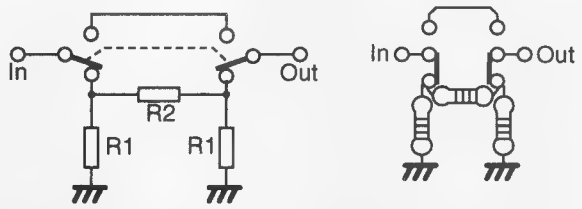


Fig 3. Circuit Diagram Vs Layout

Results

The graph shows the error in the attenuation measured at 10 MHz and 500 MHz. Employing this method of construction results in an attenuator useable beyond 500 MHz. The attenuation was measured at 1000 MHz and found to be: - 0dB setting - 1.6 dB, 15 dB - 18.0 dB.

The error at this frequency is perhaps getting a bit high but not unbearable for less demanding situations.

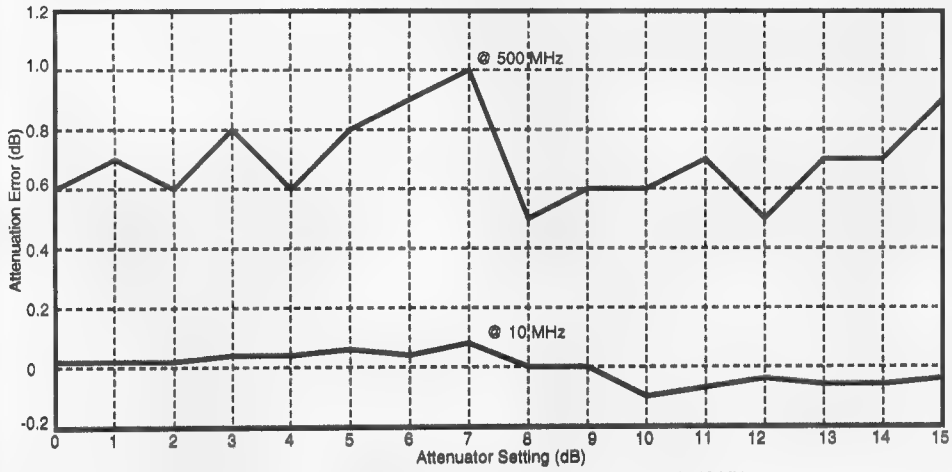


Table 1. 0-15dB Home Brew Attenuator Error at 10 MHz and 500 MHz

Conclusion

A step attenuator suitable for home construction has been described. The individual constructor can choose which combination of sections is included in his project. The performance of this design makes it suitable for use to beyond 500 MHz.

References

1. Bramwell D. K7OWJ "An RF Step Attenuator" QST June 1995 pp. 33, 34
2. ARRL Handbook "Low Power Step Attenuators"1993 ed. pp. 25-37 to 25-39

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NOVICE NOTES

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Please note that this is Peter's correct address.

Build the 'Moorabbin',

-a simple regenerative receiver for the AM broadcast band.

What can be assembled in a day, cost very little, but will give hours of enjoyment? The answer is the Moorabbin - a two-transistor receiver that anyone can build. It doesn't need an antenna, gives speaker reception of local AM broadcast stations and also receives amateurs on the 160 metre band.

Its performance surpasses most modern AM broadcast sets -you'll be able to hear interstate stations that the others miss.

How is this possible in such a simple set? The secret lies in the use of regeneration or positive feedback. By feeding an amplifier's output back to its input, it is possible to increase the amplifier's gain. However, the amount of feedback needs to be carefully controlled; to prevent the amplifier from oscillating.

Regenerative sets were replaced by superhets in the 1930s because with superhets users did not have to adjust the amount of feedback (regeneration) when they changed stations. However, in the hands of a skilled user, regenerative receivers can perform as well as more complicated superhets. An added benefit of home built sets is that constructors can use better quality components (such as air-spaced tuning capacitors, vernier dials and efficient ferrite loopsticks) that are missing on the average pocket tranny, which is designed for local reception only.

Circuit Description

Moorabbin is a two transistor regenerative receiver of conventional design. Most parts are mounted on a printed circuit board that you get to make yourself.

The regenerative detector uses a field effect transistor (FET). Like with the better valve designs, feedback is controlled by a variable capacitor. A ferrite rod was used to allow reception of local stations without an external antenna.

This FET stage forms a complete receiver on its own, but the audio output is quite low.

Photo 1 Completed Receiver

The received audio is amplified by an NPN bipolar transistor. The gain of this transistor amplifier is sufficient to provide speaker reception of local stations in most areas. The 1k to 8 ohm transformer in the collector allows the set to be used with both low and high impedance headphones.

Obtaining parts

The aim of this project was to develop a simple receiver that could be built with readily obtainable parts. With the partial exception of the main tuning capacitor, this has been achieved.

Table 1 - Component list (DSE catalogue numbers shown for convenience)

MPF102 FET	Z1832
BC548 NPN transistor	Z1308
100 ohm 1/4 watt resistor	R1050
330 ohm 1/4 watt resistor	R1062
1k ohm 1/4 watt resistor	R1074
2.2k ohm 1/4 watt resistor	R1082
27k ohm 1/4 watt resistor	R1108
100k ohm 1/4 watt resistor	R1124
1M ohm 1/4 watt resistor	R1150
100pF disc ceramic capacitor	R2285
1nF disc ceramic capacitor	R2307
10nF disc ceramic capacitor	R2321
10uF tantalum capacitor	R4750
33uF electrolytic capacitor	R4340
220uF electrolytic capacitor	R4390
60/160pF variable capacitor	R2970
10-415pF variable capacitor	(see text)
180mm ferrite rod	R5106
1k - 8 ohm transformer	M0216
SPST switch	P7654
6:1 vernier reduction drive	P7170
9 volt battery snap	S6100
6.35 mm headphone socket	P1266
BNC panel mount socket	P2220

Sundry items: non-metal case, enamelled copper wire (for ferrite rod), single-sided PC board material, hook-up wire, battery mounting bracket, other hardware as required.

Variable capacitor

A 10 to 415 pF variable capacitor was used as the main tuning capacitor. These are found in valve radios and early transistor sets. They are rare new but are still common at hamfests. Their wide tuning range make it possible to cover the AM broadcast band and 160 metres without having to sacrifice coverage of the bottom end of the broadcast band. The long shafts of these capacitors make them easier to use with vernier dial drives.

Some constructors may wish to build their set now without waiting for the next hamfest. The first version of the Moorabbin used a 60/160pF plastic tuning capacitor (same as the regeneration control) instead

of the 10-415 pF unit substituted later. Receiver performance with the plastic capacitor was good. The main difficulty was coupling it to the vernier dial, overcome by extending the shaft with a 2.5 mm diameter screw and a spacer. To compensate for the lower maximum capacitance, more turns need to be wound on to the ferrite rod to cover the whole broadcast band. Details later.

Vernier dial

It is possible to get by without a vernier dial, but using the set will not nearly be as enjoyable, especially if you want to hear more than just the local stations. Though expensive, it is worth it the benefits you get. Dick Smith P7170 is a complete reduction drive and dial, and P7172 is just the reduction drive - add your own calibrated dial for a direct frequency readout.

Ferrite rod

Ferrite rods in various lengths are available. If your ferrite rod is too long, saw a notch around it with a hacksaw. The rod is then quite brittle and can be snapped cleanly.

Transistors

Obtaining the transistors should pose no difficulty. A 2N3819 will work equally well as the MPF102 in the detector and a 2N2222 can be substituted for the BC548 in the audio amplifier. Note that the lead connections of substitute transistors may vary from those shown in Figure 1.

Enclosure

Almost any commercially available housing will do or one can be made at home. Use a wood or plastic box so that the ferrite rod is not shielded and local stations can be received without an external antenna.

Construction

Preparation

Gather the parts and plan how everything will fit . Will the tuning capacitor fit inside the case? Does the ferrite rod need to be shortened? Is the front panel large enough to accommodate the vernier drive? How will the printed circuit board be mounted? Will internal leads be short and direct?

Mounting the larger parts

Begin by mounting the larger parts to the case. Install the vernier drive. Both variable capacitors, the switch and sockets. Photograph one shows the front panel layout in the prototype.

Winding the ferrite rod

The windings on the ferrite rod determine the receiver's frequency coverage, the ability to obtain feedback so important to the set's performance and the amount of coupling between the regenerative detector and any external antenna.

Use 0.4mm diameter enamelled copper wire for all of the windings. The diameter is not particularly critical, but 0.4 mm is easy to work with and still results in fairly compact coils.

Wind all coils the same direction around the ferrite rod. Anchor the ends of each coil with a piece of insulating tape. Leave about 2cm distance between each coil. The layout of coils used in the prototype receiver is shown in Fig 2. Fig 1 shows the turns used in each winding. Note that if you're using a plastic variable capacitor for the main tuning capacitor you will need more turns on the main coil to cover the lower part of the band. 75-80 turns proved adequate in the prototype.

The ferrite rod should be mounted reasonably close to each of the tuning capacitors and to the circuit board. Try to keep leads to the coil less than 10cm long. Mount the rod horizontally in the case using a plastic or wooden bracket. This bracket could be salvaged from an old transistor radio. Brackets often have rubber grommets and are made of plastic. If this is difficult to arrange, you could use a ferrite rod longer than the width of the case and drill holes in both sides to take the rod.

Etching the circuit board

The next part of building the Moorabbin is obtaining the printed circuit board. Where does this come from? You etch it yourself! Don't worry - it's very simple and requires no special tools.

As with the latest electronic equipment, components are mounted directly on the copper surface of the board. This makes construction easier and quicker as it there is no need to drill holes through the board for

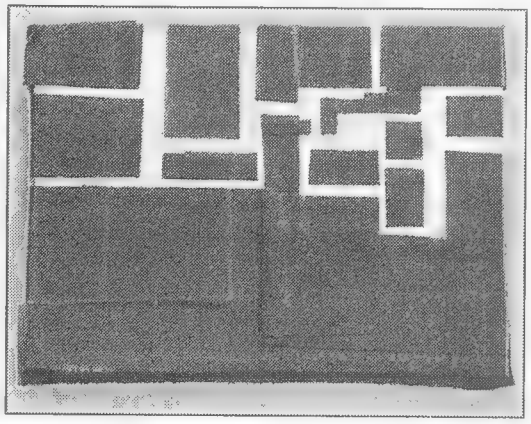

Photo 2 Circuit board prior to etching

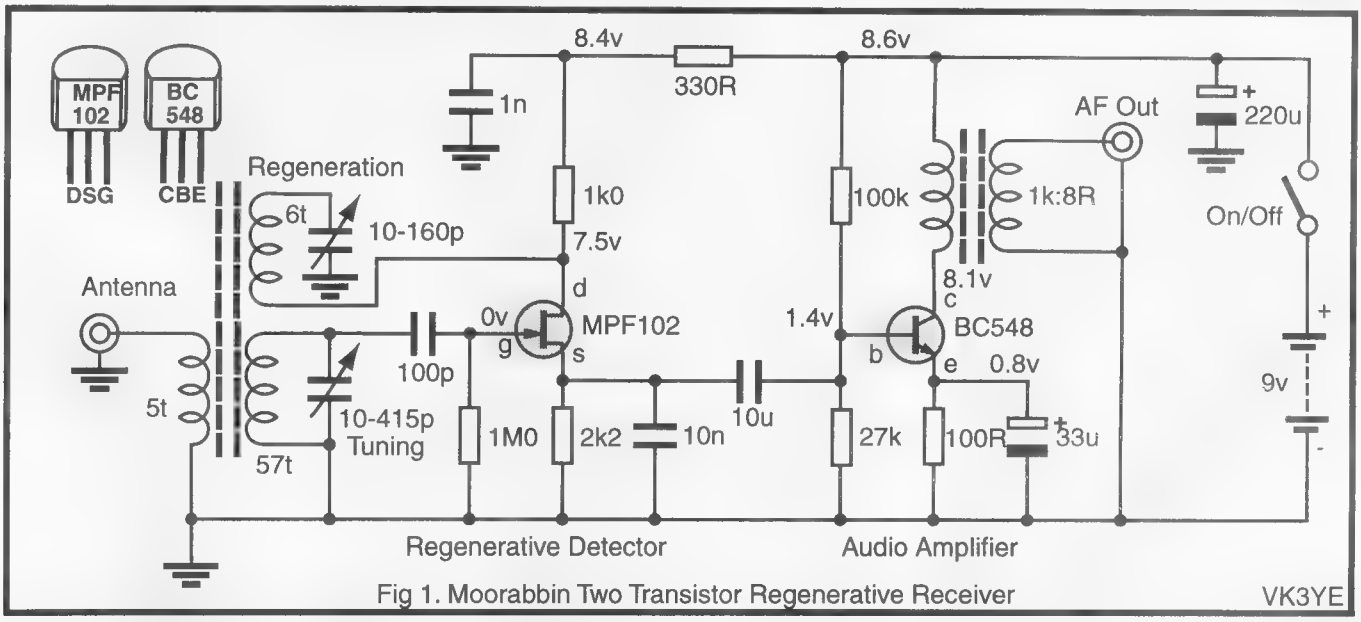

Fig 1. Moorabbin Two Transistor Regenerative Receiver VK3YE

each component. It also makes trouble-shooting and modification easier.

Cut the circuit board to size with a hacksaw. Then clean it with an abrasive powder cleanser (Ajax) and scrubbing brush to ensure a quick etch. Rinse and dry with a cloth.

Using Fig 2 as a guide, stick insulating tape on the areas of copper that will be used to mount components. Rub the tape down well to avoid erosion under the tape. Photo 2 shows the board with the tape applied.

Place the board copper side down into a bath of etching solution of ferric chloride or ammonium persulphate. Use a non-metallic etching bath and agitate gently to ensure a quick etch. Ferric chloride stains easily and ammonium persulphate should be used at about 70°C so make your own mind up.

Mounting the components

Mount the components as per Figure 2. Check that all polarities and component placements are correct. A good way to do this is to trace the connections of parts so that they accord with Figures 1 and 2. Photo 3 shows the completed board, prior to mounting in the case.

Final wiring

Use double-sided tape or stand-offs to attach the circuit board to the case. Then make all the connections between the board and off-board parts, such as the ferrite rod, variable capacitors, sockets, battery snap and power switch. Also check that other off-board connections are in place, such as between the regeneration coil and the regeneration capacitor, antenna coil to the antenna socket and the battery snap to the power switch. Do not overlook the negative (earth) connections joining the variable capacitors, all sockets, the circuit board and the negative power lead.

At this point the receiver is complete. Now time to turn it on!

Switching on

Initial test

Plug in the headphones, connect a wire antenna (any length) and apply power. Turn the regeneration control fully clockwise (ie minimum feedback). Unless you are very close to a broadcast station, you will hear nothing.

Slowly turn the regeneration control anticlockwise. When you pass a certain point, you should hear a faint hiss in the headphones. Adjust the main tuning control until you hear an audio tone (or hetrodyne) which decreases in pitch as you tune towards it. You've just tuned into your first station! Then carefully back off the regeneration control (turn it clockwise) until the hetrodyne stops.

Tuning a regenerative set is a two-handed affair. For peak performance the regeneration control needs to be reset with every station change. Higher frequency stations will need less regeneration than lower frequency stations. As you tune lower slowly turn the regeneration control anti-clockwise to assure best sensitivity and selectivity. Remember clockwise is minimum regeneration and anticlockwise is maximum regeneration.

Calibrating the dial

To know the frequency to which your receiver is tuned, you will need to calibrate the dial. Calibrate by seeing where known stations appear on your 0-100 dial.

Compare the stations this set receives with those heard on another AM receiver. Exact frequencies of stations can be found in the WIA Callbook. Make a calibration chart showing the station callsign, frequency and the reading on the vernier dial. You may want to glue this to the top of the receiver. Do all calibrations with the regenerative receiver set to just after the point of oscillation for best accuracy.

Refer to the Troubleshooting section if the receiver misses stations towards either end of the band.

Use without an antenna

The Moorabbin should receive local stations with just the ferrite loopstick antenna. If stations are weak, turn the receiver around for best signal. Stations as far away as Newcastle have been received from Melbourne at night with no external antenna connected. Use headphones for best long-distance reception.

Volume is better on both local and distant stations if an external antenna is connected (longer and higher the better). If overload from local signals is a problem remove turns from the antenna coupling coil or wire a small disc ceramic capacitor (10 to 100 pF) in the antenna line.

Receiving 160 metres

The Moorabbin is capable of receiving amateurs using CW, SSB or AM on the 160 metre band. Amateur signals will usually be weaker than the broadcast stations due to the lower power and compromise antennas most amateurs use.

Whether you can hear amateurs on your set depends on several factors. These include the tuning range of your receiver, noise levels and the amount of 160m activity in your area. A vernier dial also helps - SSB and CW signals can be tuned in with a regenerative receiver gently oscillating but require greater care in tuning than for AM signals.

Most states transmit their weekly WIA broadcasts on 160 metres. See Page 56 for times and frequencies. SSB stations can sometimes be heard chatting in the evenings. Morse is mainly used by operators seeking international (DX) contacts. As well as random contacts, there is regular scheduled AM activity on 160 metres. In Melbourne this includes the 'coffee break' net after 11am weekdays (and 9am Sundays) and the VK3ASE 'missions' from 10:30pm Saturdays to the wee small

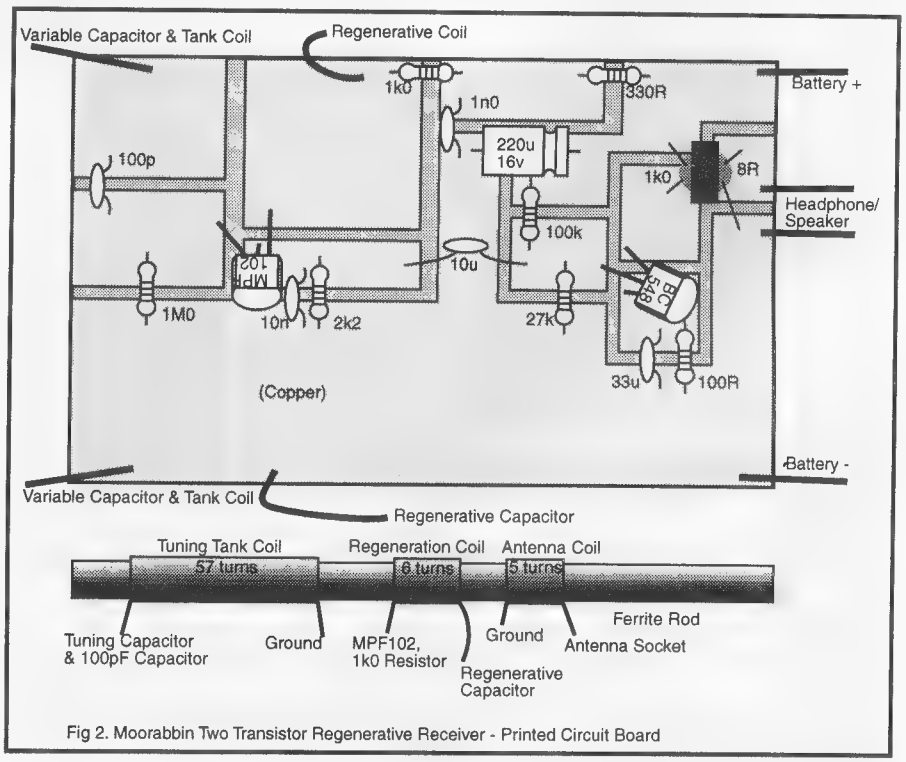

Fig 2. Moorabbin Two Transistor Regenerative Receiver - Printed Circuit Board

hours of Sunday.

Other stations

Mainstream AM broadcast stations and radio amateurs are not the only things that can be received on the Moorabbin. There is a growing number of low power special-interest stations operating between the end of the official AM broadcast band and 1.8 megahertz. Reception of these stations is a good test of the Moorabbin's performance. Frequencies such as 1620, 1629 and 1638 kilohertz are particularly popular. Again the WIA Callbook lists these stations. When AM stations are very weak it sometimes helps to listen with the set gently oscillating, rather than back off the regeneration to just short of oscillation as is often suggested.

Troubleshooting

If, with power on, and antenna and headphones, you can't get the receiver to work, check that all parts have been wired correctly. Use your multimeter to check the set's current consumption. It should be approximately 8mA. Measure voltages at various parts of the circuit. If there are significant departures from the values given, there is likely to be a fault.

The following cover most problems likely with simple regenerative receivers.

Q. WHAT IF I HEAR NOTHING IN THE HEADPHONES?

Check all wiring. See that both transistors are wired in correctly. Also ensure the transformer is connected the right way - the side with three leads coming out of it is the 1k side which connects between the BC548 collector and the supply rail.

Touching a screwdriver on the base of the BC548 is a way to test the audio stage - if you hear nothing the amplifier is faulty, but if a hum or click is heard the stage is okay.

Q. WHAT IF IT DOESN'T OSCILLATE?

Try reversing the connections to the regeneration coil. If this is not successful, add more turns to the coil and try both possible connections of the coil. It should be possible to get the receiver to oscillate with or without an antenna connected.

Q. WHAT IF IT OSCILLATES OVER ONLY THE HIGH FREQUENCY END?

With this fault good reception of stations near the top end of the band is possible, but lower frequency stations are weak and cannot be separated from one another.

Firstly check that your connections to the regeneration capacitor are right. The tag labelled 'G' should be earthed and the 'A' tag should go to the regeneration coil. Do not use the 'O' tag - this is the 60pF section and is too small for our application. If the problem persists, add a few more turns to the regeneration coil.

Q. The set does not appear to cover the entire broadcast band.

If the receiver is not tuning high frequency stations, set any trimmers on the variable capacitor to minimum and try again. If this makes little difference, remove turns from the tuning coil, a few at a time, until these stations can be received. When doing this tune to the bottom end of the band to ensure that lower frequency stations can still be received.

Add turns if you're missing stations near the bottom end of the band. Again ensure that high frequency stations can still be tuned in after any changes made.

If a 60/160pF plastic tuning capacitor is being used for the main tuning control, check that the 'A' tag is being used, not the 'O' tag. If only a small section of the bottom end is missing, try connecting the 'O' terminal to the 'A' terminal to increase the capacitor's maximum capacitance to about 220 pF.

Q. HOW DO I RECEIVE 160 METRES?

If you're lucky enough to be using a 10-415 pF tuning capacitor, it should be possible to find a number of coil turns that covers the AM broadcast band to the top end of 160 metres in one range. The set pictured covers 530 to 1870 kilohertz, which is ideal. If special care is taken to reduce stray capacitance and inductance, an even wider range is possible. The first version of this set used 'dead-bug' construction instead of the circuit board described here. It tuned 480 to 2000 kilohertz - an unusually wide range for a single variable capacitor and untapped coil.

Those using 60/160 pF plastic variable capacitors may not be able to achieve a tuning range wide enough for both the broadcast band and 160 metres. Either compromise by sacrificing the bottom 50 - 100 kilohertz of the broadcast band for 160 metres or add a switch and coil tap (15 to 20 turns from the end) to provide full coverage over two ranges.

If there is no 160 metre activity while adjustments are being done, there are several ways to establish the frequency to which the receiver is tuned. One is to use a dip oscillator, signal generator or transceiver to produce a local signal on 1.8 megahertz.

Another approach is to use a calibrated SSB communications receiver. Bring a short pickup wire from the receiver antenna socket to near the receiver. Bring the set into oscillation with the regeneration control. It will be possible to find the frequency of the oscillating set by looking for a carrier on the communications receiver. Backing off the regeneration should cause the carrier to vanish. This method is very accurate and is recommended for calibrating the receiver as well as establishing its precise tuning range.

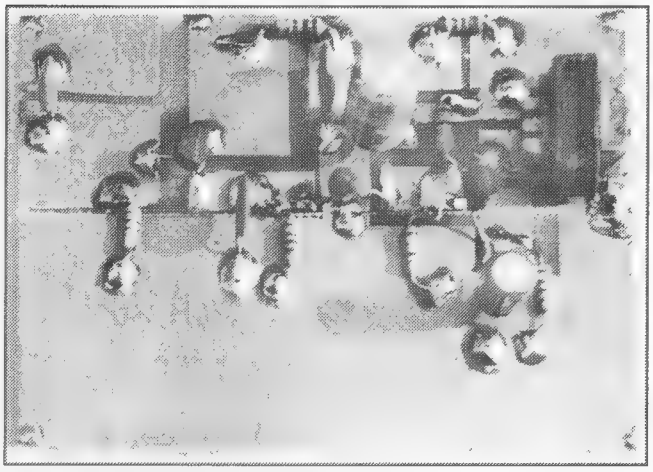

Photo 3 Assembled circuit board

Q. WHY WON'T THE RECEIVER WORK WITHOUT AN EXTERNAL ANTENNA?

A. There are two possibilities. Either you live in a weak signal area, where there are no strong local stations on the AM band, or you built the set in a metal box. If in a weak signal area, try listening at night - in all but the most remote localities stations will be heard with just the ferrite rod.

If you built the receiver in a metal box, pull the whole thing apart and use a plastic or wooden case instead. Because plastic or wood allows signals to reach the ferrite rod, you will be able to use the set without an external antenna in most places.

Q. DON'T REGENERATIVE RECEIVERS CAUSE INTERFERENCE TO OTHER RADIOS?

Early days of radio are full of stories about the interference that oscillating regenerative receivers caused to other receivers.

These risks still exist, but are less significant nowadays. In bygone years people used valve sets with large antennas. Today broadcast stations are more powerful and no one apart from long-distance radio listeners connects outside antennas to their receivers. Also the strength of signals emitted by oscillating transistorised regenerative receivers is much less than the original regenerative sets, which used valves.

Try This

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Electret Microphone without a Battery

Many an old crystal or dynamic microphone ends up on the scrap heap because replacement transducers cannot be obtained.

Modern electret microphones offer excellent sound quality, are physically very small and cost next to nothing. But they do need a voltage supply of about 1.5 volts. Although the electret itself has a permanent electrostatic charge built into the diaphragm material, this voltage supply is needed to power a FET that acts as an impedance converter and amplifier.

This voltage supply can easily be obtained from within your old microphone if it is a Push-To-Talk type where the PTT button activates a relay in your transceiver. The figure shows the circuit diagram for the original mike and the refurbished mike respectively. The ground connection for the PTT circuit is broken and two ordinary silicone rectifier diodes are wired in as shown. Whenever the PTT is activated the relay current through the two diodes provide a voltage drop of about 1.4 volts as required. A resistor and coupling capacitor completes the microphone circuit.

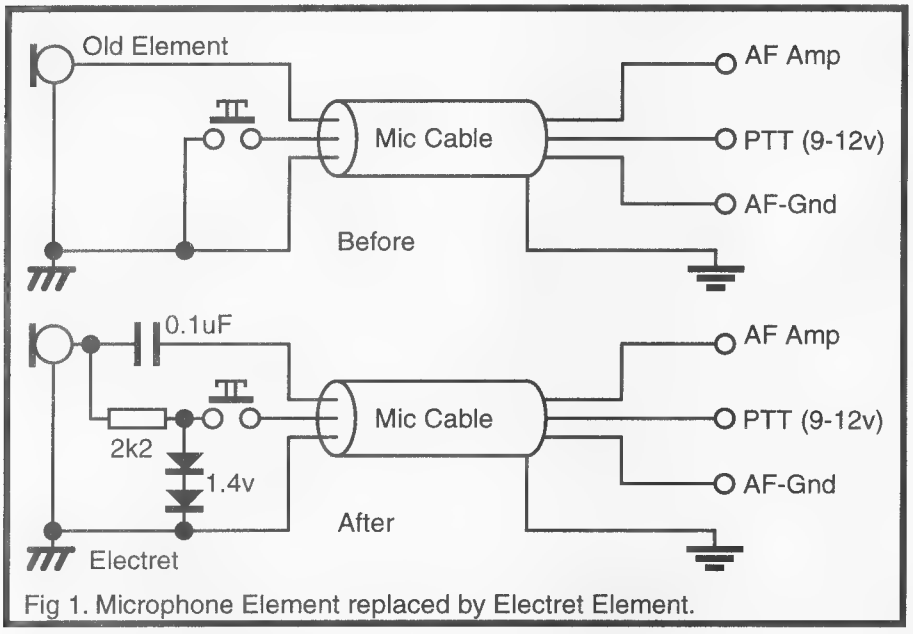

Fig 1. Microphone Element replaced by Electret Element.

During the past t fifteen years I have used two of these microphones and have had no trouble with RF pick-up or hum. However, if the relay supply is exceptionally noisy, filtering can be provided by inserting another resistor in series with the one shown, and a capacitor to ground between them.

When mounting the electret capsule in the microphone housing observe the following:

1 Make a mounting plate of thick cardboard or similar material, that fits snugly in the recess of the original capsule.

2 Drill or punch a hole in the mounting plate that provides a snug fit for the electret.

3 Seal the mounting plate to the housing and the electret to the mounting plate with beeswax (use a soldering iron).

4 Fitting the electret into the housing without sealing off the air volume inside the housing, as described above, could have a detrimental effect on the frequency response of the completed microphone.

Some more modern microphones housings may have extra wires for frequency up/down buttons etc. These can be ignored as long as the diodes are put in the right spot and in the right orientation, ie in the wire between the PTT button and ground only.

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Build the 'Moorabbin' continues

As an experiment, the Moorabbin was brought to oscillation in the same room as a 10 year old clock radio. The oscillation was weak in the clock radio at 1 metre distance. At 5 metres it could not be heard at all. It is thus unlikely that this set will cause interference to neighbours even when it is used oscillating.

What to do next

This set can be made to operate on lower frequencies by adding turns to each winding on the ferrite rod and parallelling all gangs of the tuning capacitor used. Gradually add turns until stations in the bottom end of the AM broadcast band (530 - 700 kHz) are at the top end of the receiver's tuning range. The main reason why one would wish to do this is to receive the aircraft beacons in the 200 to 500 kHz band and to experiment with receiving the low frequency tests from Tasmania on 177 kHz.

By removing turns higher frequencies can be covered. This will allow reception of some international shortwave broadcast stations, VNG/WWV and the eighty and forty metre amateur bands. This is fun to try, but don't expect top performance; the Moorabbin's plastic case and ferrite rod are okay on MF but not good for HF.

Good results from regenerative receivers are certainly possible on HF.

Readers interested in HF reception are advised to build the set described in Amateur Radio June 1998. This solidly-built receiver uses a metal case, high quality variable capacitors and vernier reduction drives, voltage regulation, adequate bandspread, and isolation of the regenerative detector from the antenna to deliver good performance. Factors such as these make the difference between a mediocre performer and one that compares favourably with more sophisticated equipment. **ar**

REPEATER LINK

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A slight diversion from Repeater Link this month with some information on a relatively new facet to Packet operations. Will McGhie VK6UU will return with Repeater Link in December. Please send any news or information on repeaters to Will.

It has been a while between Packet Radio submissions so if you have any Packet information to share please send it to AR Magazine c/o WIA Federal Office. Perhaps there is enough material and interest to constitute a column again. There must be new equipment and recent innovations so please, if you know about it, share it..

TELETEXT - The Silent Revolution

by Gerard VK2DAA
for AAPRA Digipeat
and the National TT Network.

There's a silent revolution happening on your BBS.

It's not the reduction of WIA bashing bulletins, nor the elimination of the packet pirates. It's not even the reduction in volume of trashy WW bulletins. Something far more important has occurred, and it's been so silent that you may not have even heard about it. Alas, let me shatter that silence.

The Hunt

How often have you posed yourself a question and then thought -I bet that information is on the packet network. Armed with that you go to your packet screen and log in to your BBS, ever hopeful that you can find the information you seek. Where do you start?

The BBS seems to have fifty thousand messages. How do you sort all of those? The "LC?" command could list all the categories of messages, and after looking at 300 of these you could list likely categories and then read each relevant message.

Another way would be to do a search through all the message subjects with the LS command and read through each message. There are other ways, but all-in-all it's a bit of a bear trying to track down the information.

The Catch

What is needed is a way of gathering all of the information together and categorising it for easy access, perhaps with a hierarchical system of menus to make it easier to navigate.

Enter Teletext, a data storage and retrieval system based on pages of information accessed by number. Teletext originated in the TV broadcasting industry and has now been adapted for packet. In TV, the unused bandwidth available between each field of the picture was utilised for sending textual data and limited graphics.

The data slipped through unobtrusively and any viewer equipped with the appropriate Teletext signal decoder was able to select pages via a keypad and view them on their TV. Channel Seven runs a very good Teletext system.

Packet Teletext

As with TV, there is Teletext data being shipped unobtrusively around the packet network. Unlike TV though, the data is being stored by each equipped BBS, mainly to allow fast retrieval. The data is unobtrusive because it is all sent as personal messages rather than as bulletins and this is done to guarantee delivery at each operating BBS. The same cannot be said for bulletins that can easily go astray for a variety of reasons.

Using Teletext

There is a good chance that your local F6FBB BBS is a cooperative Teletext system member. If not then there is probably one near.

Most BBSs advertise that they have the Teletext system in the command prompt. They show the command TT, mention Teletext or sometimes it is called Think Tank. You can see it by entering the TT command and watching the response. An error message is not a good sign!

Teletext Commands

There are surprisingly few commands to learn - "what a relief!" Entry to the system is gained by "TT" and you can exit again with "B" to quit completely or "F" to get back to the BBS. A help listing is obtained by entering "?"

The pages of information are displayed by entering a three-digit number such as "100" for the index page. The available number space has been divided up into ranges for various related-interest areas. Each of these has its own index so that it is possible to see by downloading just a few pages what is stored in a particular area.

Categorisation

The categorisation based on number ranges is as shown below. Note that this applies to the Teletext system running on packet BBSs in Australia and New Zealand only. We are pioneers in this area; the essential software for updating the Teletext pages was written in Australia.

000	Help screen (same as "?" command)
001 - 099	Local BBS pages (not released into national grid)
100 - 110	Index screens
111 -	Test page for all to use
112 - 199	FBB BBS overview
200 - 299	Experimenter's corner
300 - 399	NZART (ZL)
400 - 499	PNGARS (P29) and Continuation of pages longer than 7.5k
500 - 599	VK Packet Services
600 - 699	Clubs in VK3, VK5, VK6, VK7, VK8 & VK9/0
700 - 799	Federal Interest
800 - 899	Divisional Interest
900 - 998	Clubs in VK1, VK2, and VK4 plus Special Interest Groups
999 -	New pages released into national grid

As you can see, there are a wide variety of topics. The pages from 001 to 099 are reserved for use by your local sysop. All the rest of the pages are sent around what is referred to as the national grid.

Content

The type of material suitable for inclusion in the Teletext system is that which is of a fixed or slowly changing nature with wide appeal to either the whole amateur community or to a defined interest group. An example would be information on a local club, or the DXCC countries list, or a list of 6m beacons.

Unsuitable material would include the coming events for a club or Keplerian elements for amateur satellites. This material is too transient and is better placed as a bulletin on the packet system.

Organisation

The national grid for the Teletext pages was set up by Graham VK4BB and he administers additions and corrections to the distribution system. He also looks after new pages being added to the system and distributes a page with updates that have been made recently (page 999). In New Zealand, Phillip ZL2TZE fulfils this role.

James VK4XJB wrote the automated TT page "grabba". Yep, SysOps won't need to do a thing! Pages, thanks to James get inserted in the correct "slot" automatically. VK4XJB has also written the LINUX Teletext software. (VK4XJB @ VK4XJB)

Contributions

Anyone can contribute pages to the system. For the national grid, this is done by submitting them to VK4BB or ZL2TZE. They check them and send them on the national grid. They also update any link pages and send these out as well. The recent updates page is also added to and periodically distributed.

If you have information for local distribution, this should be sent to the sysop of your local Teletext BBS. There are special character sequences to be included in a Teletext file, but that is beyond the scope of this article. Consult your sysop for details.

Please try the Teletext system on your local BBS -it's the fastest way to find information on packet -and let the revolution continue!

ar

Slow Morse Practice Transmissions

VK2BWI	Nightly at 2000 local on 3550 kHz VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm
VK3COD	Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz
VK3RCW	Continuous on 145.650 MHz, 5 wpm, 10 wpm
VK4WIT	Monday at 0930 UTC on 3535 kHz
VK4AV	Thursday at 0930 UTC on 3535 kHz
VK4WIS	Sunday at 0930 UTC on 3535 kHz
VK5AWI	Nightly at 2030 local on 3550 kHz
VK5VF	Continuous on 145.650 MHz, 5 wpm to 12 wpm
VK6RCW	Continuous on 147.375 MHz, 3 wpm to 12 wpm

Don't forget to send updates and changes as they occur to WIA Federal Office.

Sample of material found on index page 107

700	WIA FEDERAL postal address/ phone
701	AR Magazine publicity #'s
702	WIA and "the brag files".
703	Register of stolen gear
704	WIA video cassette service
705	WIA NEWS SERVICE
706	
707	Amateurs "10 Commandments"
708	INTRUDER WATCH - FEDERAL
709	Amateurs Code
710	AWARDS VK WIA
711	QSL card collecting & museum
712	NETS 713 CONTESTS and AWARDS
714	Hunting Lions in the Air Contest
715	CONTEST HOW TO WIN
716	CONTEST RD
717	CONTEST VK/ZL
718	CONTEST Gisbourne ZL
719	CONTEST Scouting
720	CONTEST ALARA
721	CONTEST Jack Files
722	CONTEST Merv Stinson Sprint
723	CONTEST WA
724	CONTEST Australasian Sprints
725	
726	WIA Cable TV Report
727	AX Prefix Olympics/Aust Day
728	HF B/casters pressure HF
729	Craig Shergold Saga
732	ACA WIA LIAISON TEAM
733	RECIPROCAL JA/VK Licence
734	ACA DataBase on WWW
735	RECIPROCAL USA Licence 736 ACA Repeater Assignments
737	
740	AMATEUR RADIO OPEN DAY
741	AR PROMOTIONAL MATERIAL
744	Repeaters in VK4
745	CW Learn from flash cards
750	146.000MHz a No No for FM
751	FMA No No on HF
756	VHF and AIRCRAFT ENHANCEMENT
757	
758	NEGATIVE FREQUENCY DISCOVERED
759	Y0K PROBLEM 2000 yrs ago
760	
761	ACA OLYMPICS & use of 70cm
762	AWARD VK2 "cities\shires"
763	ACA Advertising
764	AWARD VK2 "clubs"
765	ACA Experimental Licence
766	AWARD VK2 "25's"
767	
768	AWARD VK4 "REDCLIFFE"
769	
770	AWARD VK4 "Rally Australia"
771	World Time Zones
772	Band Plan Etiquette
773	Band Plan 50 Below
774	Band Plan 50 Plus
775	CW Achieve It Easily
776	SLOW MORSE. Cpy WIA & these stns
777	WWV
778	RFDS Frequencies in VK
779	CEPT
780	
781	IARU BEACONS
782	REGION 1 VHF to EHF records
783	TEN-10
784	IARU Admin Council Meeting Oct 96
785	
786	IARU Packet guidelines etiquette
787	10 meter gateways/beacons
788	VK VHF UHF RECORDS
789	BEACONS IN VK
790	SAREX & NASA frequencies.
791	SATELLITE FREQUENCIES.
792	AIRCRAFT HF/VHF frequencies
793	
794	
795	B/cast station call signs.
796	Amateur Cosmonauts & MIR history.
797	What is a "HAM"?
798	Amateur "PERSONALITIES".
799	REWIND. AR HISTORICAL EVENTS

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Look who's on the Web!

IT'S YOU!
Well it could be. The possibilities for your own presence on the web, these days, are almost endless. Comments will have immediately sprung up like: - How much does it cost? I'd have to be a computer guru, This will probably help fade the curtains? - etc. Well OK maybe the last one is stretching it a bit, but all these sorts of questions come up, along with the standard, what, when how and why etc.

Why?

The "why" of it is something that I'll have to leave up to the individual, but there are many reasons to have a personal page on the web. They range from just wanting to show a little bit of information about yourself (picture of the shack, QSL info, brag about the paperchasing you have done etc.) to a large site specifically about an aspect of the hobby that appeals to you most and that you think you can share this info with others of the same mind.

Who, where, cost etc...

Thankfully the cost these days is not a big issue. Many places on the web are vying for your attention with offers of free webhosting. That's means they allow you space on their server for your page, free of charge. The deal may range from a couple of megabytes of space to unlimited space, in some cases. Some of the commercially run sites fund their existence by forcing you to run advertising on your site. This may or may not bother you. Some of these to check out are:

Tripod: http://www.tripod.com/
GeoCities: http://www.geocities.com/
Angelfire: http://www.angelfire.com/
CyberCities: http://www.cybercities.com/

YAHOO! GeoCities

Take a close look at what you are signing up for and check out the pro's and con's of each before committing.

Amateur Radio Only!

Amateur radio operators are fortunate in that we have an option available to us that the general web public do not, its called QSL.net run by Al Waller K3TKJ, and its free! Visit - http://www.qsl.net

QSL.net

This whole site is devoted to amateur radio and offers free webspace (unlimited within reason), email forwarding and other services. The only thing you need is an Internet connection to access QSL.net.

QSL.net is only available to licensed amateur operators.

Don't forget that if you have an account with an ISP (hard to get on the net without one!) then it's very likely that you already have space allocated to you on your ISP's (Internet Service Provider) server. These may only be a small amount but you can certainly do a lot with only a couple of megabytes!

How?

A law degree from Philadelphia would help, but only if you want to change jobs...Hi!. Actually creating a webpage is very easy these days. Quite a few of the webhosting sites have an "easy to build – automated" approach to helping you create your masterpiece, though this may limit your creativity somewhat in the early stages (Hams are renowned fiddlers who like to push the boundaries a bit).

If you want to go it alone then there are many programs capable of building web pages. Microsoft of course has many options ranging from its purpose built Frontpage (also with a lite version call Frontpage Express) to web capabilities in several of its other newer programs ie: Publisher and Word.

[Frontpage Express Logo here please]

Many other programs are available for downloading from the Net. Quality and difficulty ranging from beginner to advanced. Listed below are just a few of the more popular ones, of which some are free, but most are shareware (meaning that they may have a time limit on them unless you pay for a license).

CoffeeCup Website Software

Coffee Cup HTML Express: http://www.coffeecup.com
Hotdog Express: http://www.sausage.com/
Splash! Web Authoring: http://www.gosplash.com
Arachnophilia: http://www.arachnoid.com/
Hippee 98: http://www.troutsoft.com/hippie
Homesite: http://www.allaire.com/
Tarantula: http://NostrumIndia.com"
http://NostrumIndia.com
HotMetal Pro: http://www.hotmetalpro.com/

Of course there are many full commercial programs if you want to spend the money. eg: *Coldfusion, Dreamweaver* etc. This is just a very small selection but there is sure to be one that fits what you want to do. Oh and don't forget that Microsoft Notepad is quite capable of creating a website. Mind you, a degree in HTML language would be put to good use here...Hi. (A very good text editor that helps a lot with html coding is called NoteTab. You can download a free copy from :- http://www.notetab.ch/ -Bob)

Of course you can always go the whole hog and setup your very own domain etc. but be prepared to part with some of the hard earned!

Well it all sounds easy, right? OK. So what are you waiting for? Hams are known for sharing information and the Net is just another way of doing the same thing! Remember if you find something cool let me know so we can share it around.

Speaking of cool again, check out Jim Tabor's site at: http://www.taborsoft.com that has some very cool "Ham Tools" available to download. There's a "Sked Wizard" to help track those sked times and frequencies. Also the "Active Beacon Wizard++" which is really cool and last but not least "Kcalc" which does lots of interesting things with the time information. Jim has some other interesting "stuff" there as well.

AR

SITE CREATED WITH Microsoft® FrontPage™

TECHNICAL ABSTRACTS

Technical Abstracts
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Adapting the Astatic D-104 Microphone for use with modern transceivers

In QST August 1999 Steven Fraasch K0SF described a preamp using an Op Amp to adapt the Astatic D-104 microphone to a modern transceiver.

The preamp is used to match the high impedance D-104 to the low impedance input of a modern transceiver. The microphone was originally intended for use with the high impedance microphone input of a valve transceiver.

Modern transceivers are designed for use with a low impedance microphone. The preamp using an Op Amp is essentially an impedance matching device to allow optimum microphone performance with the modern transceiver.

The pre-amp circuit is shown in Fig 1. The Op Amp used can be substituted if necessary. The Op Amp is a National LPC662 and was in an SO8 surface mount case in the original. The author suggested an Archer TLC274 as a substitute. These may be available from Tandy locally.

The Op Amp is a low distortion, low noise, low bias current device which provides nearly rail to rail output voltage. It also draws only 100 microamps or so which simplifies a power feeding. The circuit can be built dead bug style on a scrap of printed circuit laminate mounted in the base of the microphone.

Power can be fed down the microphone audio lead as shown in Fig 2 with the capacitor and resistor built into the microphone plug. Or the feed components could be built into the transceiver, or an external power source could be used.

#The wiring of the microphone is altered as shown in Fig 3. This connects the microphone element to the preamp in a balanced configuration and separates the PTT circuit from the audio earth.

The original was used with an IC781 transceiver. Good audio reports were received when using the D-104 microphone with the inbuilt preamp.

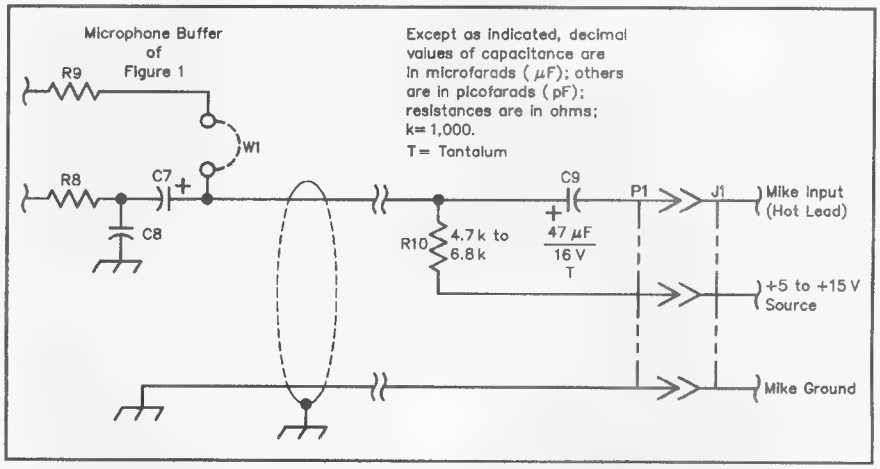

Fig 2. Power Feed Circuit.

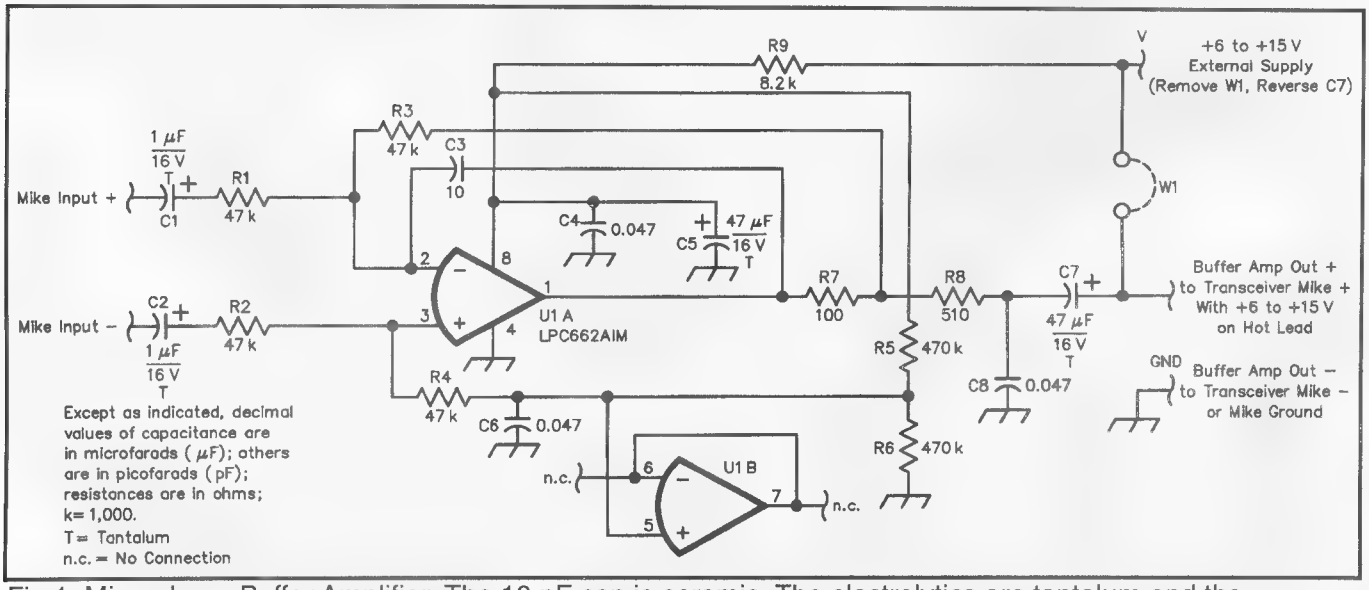

Fig 1. Microphone Buffer Amplifier. The 10 pF cap is ceramic. The electrolytics are tantalum and the remaining capacitors are film types.

Recreating Y-Gerat

In QST May 1999 Brian Kendal G3GDU described an experiment which recreated the German WWII Y-Gerat bombing navigational system. The recreation used a repeater, three transceivers and a CRO.

Y-Gerat was a navigational ranging system that helped a bomber find its target. The system was described in the book *Most Secret War* by R V Jones.

The system worked by transmitting an audio tone to the aircraft on 42.5 MHz. The tone was received and retransmitted by the aircraft on 46.9 MHz. At the base station the

received and transmitted audio tones were compared on an oscilloscope and the time taken for the signal to make the return trip determined. This gave the range of the aircraft from the base station. The base station could then determine when the aircraft was over the target.

The use of the 40 MHz frequency was not essential but obviously convenient. To recreate the system a two-metre repeater was used as the re-transmission unit. The repeater access tone used in the UK of 1750 Hz was used as the audio tone.

After some experiment the setup shown in Fig 5 was used. The signal from transceiver 3 is monitored by transceiver 2, which provides the synchronising signal to the CRO timebase. The signal received from the repeater is received by transceiver 1 and the delay is measured with the CRO. The signals from transceiver 1 and transceiver 2 are applied to two traces on the CRO so that the delay can be determined. The delay through the repeater can be determined by comparing the delay with that expected from a known location.

In the test an IC821 was used for transceiver 3 and two IC2 handheld transceivers were used for transceivers 1 & 2. This allowed the delays in the two handhelds to be cancelled out as their receivers should have equal delays. This can be checked by substituting transceivers.

Working on 10.74 microseconds as the propagation time for a statute mile and 12.36 microseconds for a nautical mile the author succeeded in measuring the distance to a repeater of a measured 12.6 miles as 12.8 miles which is pretty good for a few transceivers and a twin trace CRO in the back seat of a car.

Countermeasures to the original system consisted of re-radiating the signal from the BBC TV transmitter at Alexandra Palace. This resulted in false readings and great confusion.

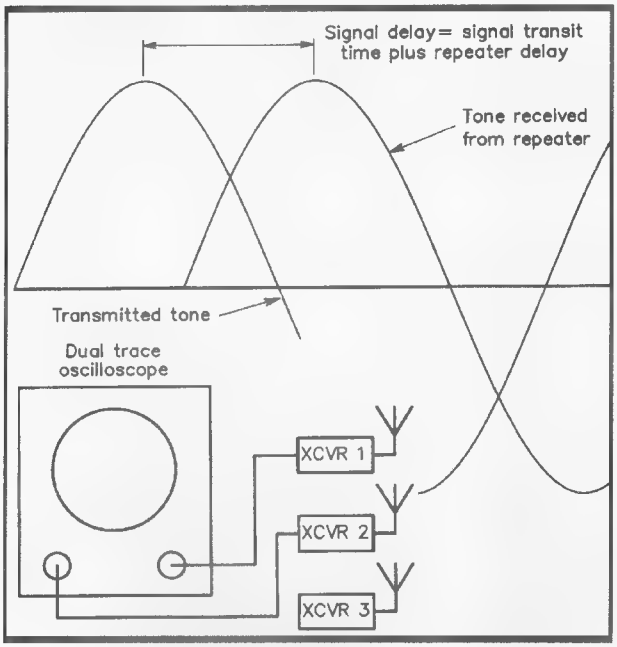

Fig 5. Test Set Up to Recreate Y-Gerat. By alternating transceivers relative delays can be compared. If tranceivers 1&2 have the same delay they will cancel and can be ignored.

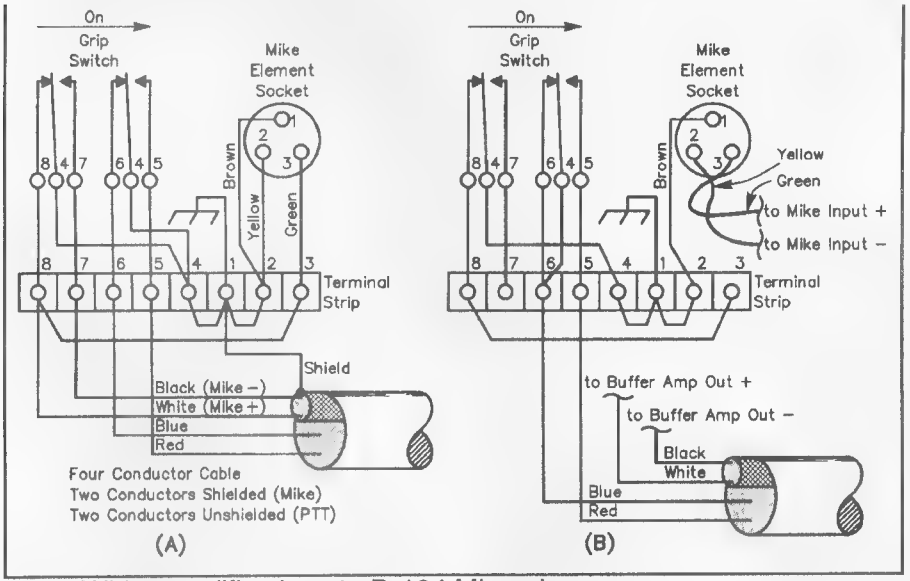

Fig 3. Wiring modifications to D-104 Microphone.

Shielded Balanced Feed Line

In the "Doctor is IN" column in QST May 1999 a useful idea for making a shielded balanced feed line appeared. Two parallel lengths of coaxial cable are wired to act as a shielded balanced feed line. This can be useful where a balanced feed must be run in close proximity to earthed metal structures.

The two coaxial cables are run in parallel held together by cable ties or tape. The shield braids are shorted together at both ends and earthed at the shack end. The inner conductors become the shielded balanced line. The connection is shown in Fig 4.

The drawback of this technique is that the losses are greater than for open wire or ladder line. The benefit is the line can be run over metal structures such as a roof.

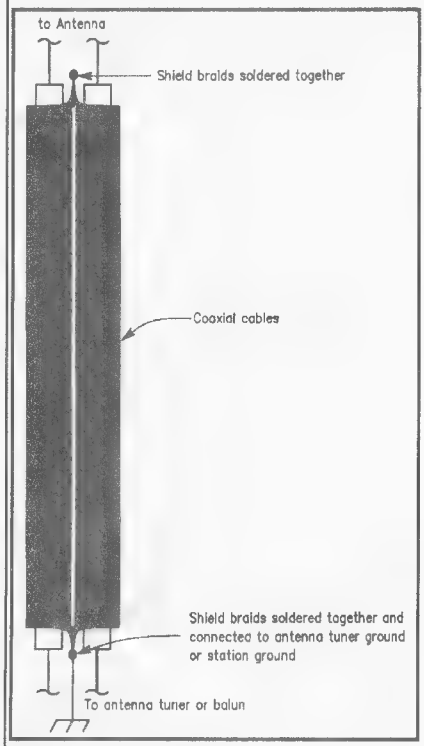
to Antenna
Shield braids soldered together
Coaxial cables
Shield braids soldered together and connected to antenna tuner ground or station ground
To antenna tuner or balun

Fig 4. Shielded Balanced Feed Line.

Correction

In Tech Abstracts AR September 1999 p32 an error occured the Simple 50 Ohm Feed W8JK Beam. (Originally from QST June 1999 it was corrected in the July 1999 edition. The spacings in Table 1 should be 15.4 inches or 390 mm for two meters and 44.3 inches or 1126 mm for six metres..

ar

VHF UHF AN EXPANDING WORLD

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All times are UTC

Spring VHF-UHF Field Day Contest

Remember that the Spring Field Day will take place on November 13 and 14. (VK6 runs from 0400 UTC Sat. 13 November to 0400 UTC Sun. 14 November. All other call areas from 0100 UTC Saturday to 0100 UTC Sunday). Time changes take into account daylight savings time.

There is an adjustment to the band multipliers to increase the incentive for stations operating only on the lower VHF bands. The same band multipliers will also be applied to the Ross Hull Contest and the Summer VHF-UHF Field Day.

The various rules and operating conditions are outlined in October Amateur Radio in the contest pages. The Golden Anniversary Ross Hull Memorial Contest commences on 26 December and details for this contest and the Summer VHF-UHF Field Day should appear in this issue. Readers and others are urged to support these contests to ensure their survival.

John VK3KWA, the Contest Manager, says: "This year marks the fiftieth anniversary of the contest named in honour of Ross A. Hull, the Australian born amateur who discovered tropospheric propagation and made major contributions to the development of VHF equipment design and construction.

There are several changes to the contest rules. Last year's short contest was not successful, so the duration has been extended again. There is a return to scoring based on the best 7 UTC days of your choice, and a separate section for the best two consecutive UTC days. This means that you can operate for only part of the contest, or even just one weekend, and still do well.

The band multipliers have been reduced slightly, to provide more incentive for those who do not have microwave gear.

The rules about the use of calling frequencies have been reworded, so please read them carefully. I do not want to penalise occasional contest operation on calling frequencies when it is genuinely impractical to move to another frequency. But it is important to keep calling frequencies clear of local QRM so that it is possible to hear any weak signals that may appear.

A list of the 49 past winners will be published next month.

Over to David VK5KK

Contests, an important role in activity?

By the time you read this we will be in the middle of the "Late Spring" Field day contest in mid November.

In one form or another, "Contesting" has been part of the amateur radio scene almost since inception and an important part of the VHF/UHF scene. Such contests as the Ross Hull and the John Moyle Field Day are just two examples. For those who have the equipment, there are EME contests.

In the past, and maybe somewhere still, the VHF Scramble was a popular night-time pursuit.

Propagation creates another "contest" ... that of breaking distance records. Each contest has evolved to suit its environment with some form of equitable scoring. But as usual, the fickle finger of fate (propagation and geographic location) rarely gives everyone a fair chance.

Overseas, contesting occurs on a larger scale on the VHF and above bands. In the US and Europe, contesting is a major part of Microwave activity.

Now a quick look at the US "Contest Rover".

Contest Rover

What is a "Contest Rover"? Most are familiar with the "Grid Locator" system, i.e. a global system of grid squares defining location by a 2-alpha/2-digit code. (See the article on Grid Squares in this issue. Ed)

A grid locator type contest is a numbers contest, working as many grid squares as possible in a short period of time. Given the size of a grid square and being surrounded by up to 8 other grid squares less than 100km away, gives a contest that can survive without propagation. You multiply contacts by working the same stations on multiple bands, adding an incentive for higher bands.

To score well you will need to work multiple grid squares on as many bands as possible. To excel means being portable on a good hill. But with only so many stations available, it is not hard to work everyone and then you are left looking for more.

But! If portable stations can activate multiple grid squares in one contest, you have a new contact multiplier. This is almost as good as having extra participants and if these grid squares are activated in a systematic manner, a new area of exploitation exists.

Enter the Contest Rover.

A Contest Rover is either a lone team or part of a larger group. The group approach enables pooling of resources. This means more bands can be implemented quickly as each group has a specialist who will look after the harder bits, like microwave stuff. After years of work, some impressive 9 band portable stations have been developed and some very basic ones that do almost as well. Some groups may have two or three Rovers and interact with other groups of similar size. It is not unknown to have 30 to 50 Rovers in the field, with a large number within range of each other during contests.

Sound all too hard? Perhaps not. The Rover concept also pushes just how little you need to get going on a particular band. For example, activity above 1200 MHz has been mostly done with basic transverter kits running ~20 mWs, driven by IC202s and alike. While this means portable work may only be successful from good hilltop locations, the 100km/8 grid square contacts are still achievable.

The underlying benefit of all forms of contesting is the increase in activity and usage of VHF and above bands. In the Rover example, activity on Microwave bands has been created where none existed before. With our current calendar of three field day contests, we now have a chance to progress a step further. While we do not have the population density to have contests on the scale of overseas, we do have the geographic ability to mount "local" challenges for grid squares and to use some of the higher frequencies, a simplistic contest as the means to more activity?

The number of portable participants has varied little in recent times, yet the amount of interest seems to be on the increase. Those who often go portable may relate the number of times when others, sharing a common interest in the outdoors, have expressed more than passing interest. The gap between the "would if I could" group

and "those that do" needs improvement!

If you go portable, take a few interested amateurs with you. If they get the bug then they may go out next time and add to the numbers. Plenty of equipment is available on the second-hand market to take portable. Or maybe you have some equipment to help a portable station get on other bands. Any participation is still better than none! See you in the next contest!

Two-meter Transatlantic Tests Disappointing

Paul Piercy VO1HE, led a group of Canadians attempting to make the first transatlantic contact on 144 MHz. They operated VO1AA from Cabot Tower, the site of Marconi's 1901 transatlantic tests at St John's, Newfoundland, from June 26 to July 3. On the other side of the Atlantic, **Bill Ward, GM0ICF,** led a Scottish team, who operated 2S0ICF/p from Ardnamurdan Lighthouse, the most westerly point in the British Isles. Despite a week of coordinated transmissions, nothing was heard. A Belgian group, under the call OT9D, was forced to cancel its efforts due to generator failure and logistical problems.

Indian Ocean Trophy

Following on from the above two metre tests, I further draw your attention to my offer in the September issue to make a trophy available for the first two metre terrestrial two-way contact across the Indian Ocean.

The title of The Indian Ocean Trophy may not seem startling but is appropriately descriptive. I now believe that the first contact should be between the Australian landmass and the African land mass without any places between them qualifying.

A tape recording of both ends of the contact is mandatory unless I can be otherwise satisfactorily convinced that it should not be required, more later.

New beacon

Peter VK3KAI advises that Ralph VK3WRE has installed a new 23 cm beacon (in test mode) in the Gippsland area at Carrajung, south-east of Traralgon. It runs two watts on 1296.534 MHz to an Alford slot antenna with the callsign VK3RGI. Reports of reception are welcomed.

UK 47 GHz distance record smashed

Roger VK2ZRH sent this from GB2RS, who in turn thanked Peter Day G3PHO, Editor of the *RSGB Microwave Newsletter*.

The UK 47-Gigahertz distance record of 137 km, set up by G3FYX, G3PYB and G8ACE in June '99, was broken during the RSGB 24 and 47 GHz Contest on 5 September. Martin Farmer GW7MRF/p and David Hall GW8VZT/p, each made two-way contacts over 161 km from the summit of Cyrney Brain in North Wales with Paul Widger G0HNW/p, located at Shap in the Lake District.

This long path was line-of-sight. Paul's narrow band FM signals were RS 57 with GW7MRF, while the Welsh signals peaked RST 529 at Shap. This difference was due to G0HNW/p equipment being more potent than that of the GW stations - he was using 25 milliwatts output to a 3foot diameter dish, as against GW7MRFs 150 microwatts output to a 10-inch diameter dish.

Additions, updates and guidelines requests to Guy VK2KU, <guy@ics.mq.edu.au>, or by mail (QTHR 99).

Note: All scores have been entered this month rather than any minimum numbers. I will discuss the matter of whether or not there will be any entry numbers with David VK5KK whose responsibility the list will become next year. ... VK5LP.

Gridsquare Standings at 20 September 1999

144MHz

VK2ZAB Gordon	58
VK3BRZ Chas	55
VK2DVZ Ross	52
VK2KU Guy	47
VK3CY Des	47 (+26 EME)
VK3TMP Max	46
VK2FLR Mike	42 (+74 EME)
VK3EK Rob	37
VK3XLD David	35
VK2DXE Alan	33
VK3BDL Mike	31
VK3CAT Tony	29
VK6HK Don	28
VK4KZR Rod	27
VK3BJM Barry	23
VK1MP Rej	21
VK6KZ Wally	19
VK3KAI Peter	18
VK2TZ Dale	16
VK6KZ/p Wally	16
VK3WRE Ralph	15
VK3AL Alan	14
VK3TLW Mark	14
VK6BIK Chris	6
VK2TJE John	5
VK1WJ Waldis	4
VK3HZ/2 David	1
VK3HZ/8 David	1

432MHz

VK2ZAB Gordon	33
VK3BRZ Chas	32
VK3XLD David	27
VK3CY Des	23
VK3TMP Max	19
VK3EK Rob	18
VK2DVZ Ross	17
VK2KU Guy	16
VK3BDL Mike	15
VK3BJM Barry	15
VK4KZR Rod	14
VK6KZ Wally	12
VK3KAI Peter	11
VK3AL Alan	10
VK3TLW Mark	10
VK6KZ/p Wally	8
VK3WRE Ralph	6
VK1MP Rej	5
VK3HZ David	5
VK1WJ Waldis	4
VK2TZ Dale	4
VK2DXE/p Alan	2
VK3HZ/2 David	2
VK3HZ/8 David	1

1296MHz

VK3KWA John	19
VK2ZAB Gordon	11
VK3EK Rob	11
VK3TMP Max	10
VK2DVZ Ross	9
VK3BRZ Chas	9
VK3XLD David	9
VK4KZR Rod	7
VK3AL Alan	6
VK3BJM Barry	6
VK3TLW Mark	6
VK6KZ/p Wally	5
VK2KU Guy	4
VK3KAI Peter	4
VK6KZ Wally	4
VK3WRE Ralph	3
VK2DXE/p Alan	2
VK2TZ Dale	1
VK3HZ/2 David	1

2403MHz

VK6KZ Wally	4
VK3WRE Ralph	3
VK3KAI Peter	2

3456MHz

VK6KZ Wally	4

5760MHz

VK6KZ Wally	4

10GHz

VK6KZ Wally	5

24GHz

VK6KZ Wally	2

Two metres and above

Rob VK3EK reports as follows: 25/9: 144 MHz: 2205 Des VK3CY 5x9; 2207 Max VK3TMP 5x9; 2210 Ross VK2ZRE 5x1; 2244 Rej VK2MP 5x3; 2256 Gordon VK2ZAB 5x2; 2333 Trevor VK5NC 5x7. 432 MHz: 2258 Gordon VK2ZAB 5x1. 26/9: 144 MHz: 0034 Doug VK3KAY 5x6; 0120 Alan VK3XPD 5x5.

Gordon VK2ZAB reports his contacts: 24/9: 144 MHz: 2137 Ray VK2BRG Coffs Harbour 5x5; 2139 Neil VK2EI Port Macquarie 5x3; 2144 Eric VK2KGX (local) 5x9; 2145 Alan VK2DXE (local) 5x9; 2201 Warren VK3BWT Mallacoota 5x4; 2207 Rej VK2MP Murrumbateman 5x5; 2211 Ross VK2ZRE Adaminaby 5x3. 23cm: 2215 Lyell VK2BE (local) 5x9; 2225 Bob VK3AJN Wangaratta 5x1. 144 MHz: 2230 Bill VK3AMH Nagambie 5x2; 2237 Rob VK1ZQR Canberra 5x6; 2243 Carl VK2TP Wellington 5x8. 70cm: 2246 Bob VK3AJN Wangaratta 5x3. 144 MHz: 2256 Mike VK2FLR (local) 5x9; 2300 Peter VK3KAI Churchill 5x1. 70cm: 2301 Peter VK3KAI Churchill 5x1.

25/9: 144 MHz: 2130 Bob VK4ZOW Pittsworth 5x1; 2133 Ray VK2BRG Coffs Harbour 5x2; 2137 Bill VK2ZCV Port Macquarie 5x6; 2143 Wayne VK2TEV Uralla 5x6; 2151 John VK2TJE (local) 5x9; 2202 Warren VK3BWT Mallacoota 5x3; 2215 Rej VK2MP Murrumbateman 5x8. 70cm: 2216 Rej VK2MP Murrumbateman 5x5. 144 MHz: 2222 Rob VK1ZQR Canberra 5x5; 2229 Ross VK2ZRE Adaminaby 5x2; 2231 Carl VK2TP Wellington 5x8; 2238 Bob VK3AJN Wangaratta 5x7; 2240 Des VK3CY Wedderburn 5x3; 2244 Max VK3TMP Somerville 5x2; 2255 Robbie VK3EK Bairnsdale 5x1. 70cm: 2256 Robbie VK3EK Bairnsdale 5x1.

26/9: 144 MHz: 0120 Lou VK2NZ (local) 1 watt 5x4; 0129 John VK2ATU (local) 5x8; 0309 Rod VK2TGB Valley Heights 5x9. 23cm: 0138 John VK2ATU (local) 5x4.

Six metres

Ray VK4BLK at Yeppoon writes a short six metre report. 25/8: 0724-1109 - worked 16 JAs. 26/8: 0703-0947 - worked 27 JAs. 29/8: 0312-0502 - worked 2 HLs, 59 JAs. 10/9:

0300 - worked KH6IAA 5x5. 16/9: 0128-0211 - worked NH6YK 5x9, KH6IAA 5x9, WH6XM/m 5x5, KH7L 5x9, KH6CM 5x9.

Graham VK6RO of Perth sent a joyful note to say that he finally worked and confirmed his 40th country with a contact to 9M2TO 559 on 4/4/99 at 0817. Graham said it has been a long hard slog of 20 years to reach that goal from the most remote capital city on earth. We hope the coming Cycle will reward Graham with a few more countries.

Opening to the US

The equinox is living up to its reputation of providing interesting contacts with an opening to the US.

Ron VK4BRG reports: *A great opening today 23/9 between 0110 and 0137 UTC. Worked 22 stations from South Dakota in the north to the very south of Texas. Most easterly was in Illinois. Six new grids, one new state. Interesting solar conditions were predicted a week or so ago for the period from the equinox through to the end of this month. More to come?*

Stations worked: 0110 W7XU 5x9+; 0112 K0FF 5x9+; 0113 W0SD 5x9; 0114 N5DDB 5x9; 0116 WA0KBZ 5x9+; 0117 K9KE 5x9; 0118 K0TLM 5x9; 0120 W0FN lost; 0122 WA5JCI 5x9; 0123 W5WP 5x9; 0125 WA5TKU 5x9; 0126 W3UUM 5x9; 0127 N5WS 5x9+40; 0128 AA5XE 5x9+40; 0129 W5OZI 5x9+; 0130 W3XO/3 5x9+40; 0132 W5UWB 5x9+; 0133 K5VH 5x9; 0134 W5AAW 5x9; 0135 KC5NOB 5x9; 0136 WA5UFH 5x9; 0137 KC5NOA 5x7. All were 2 way SSB.

I like to think reports were genuine. Most signals into this QTH were S9 or better. Main problem was sorting stations out from the pile up. Most contacts were on 50.130, when it was quiet I would go back to 50.110, try to attract attention and move back to 50.130. Most stations exchanged grid squares.

John VK4KK phoned me immediately after the opening and then reported stating he also found strong contacts on 23/9: 0051 KA0PQW MN 5x9; 0052 KB9JZL IL 5x9; 0053 K9AM IL 5x9; 0054 N0UR MN 5x9; 0055 W9RC IL 5x9; 0055 K9JI WI 5x9; 0056 W7XU SD 5x9; 0056 N0SPP IA 5x9; 0057 N09Z IL 5x9; 0058 K0GJX MI 5x9; 0059 N0QJM SD 5x9; 0059 W0SD SD 5x9; 0102 WB9Z IL 5x5; 0105 KA9CFD IL 5x7; 0105 KG9N IL 5x5; 0106 K0FF MO 5x5; 0111 KB0PYO MN 5x5; 0112 KC0BMF IO 5x5; 0116 KM0T IO 5x9; 0118 KA0JGH NE 5x7; 0122 WB0HHM SD 5x5. Five new northern-most states were worked during the 21 contacts.

John wasted no time with his contacts, the first 12 contacts in 9 minutes is good DX operating. The 5x9 signals for most of the stations indicated a very solid opening, such signal reports being common to all those who participated. **On 28/9 John also worked T31K** in Central Kiribati at 0204 5x5. Others to work him were VK4ZAA, VK4KJL and VK4APG.

Peter VK4APG writes: *Ten minutes prior to the W opening on 23/9 at 0050 there were strong inband JA signals. The 49.750 video had been building and JAs had previously reported ZL and VK indicators. Was this JA opening F or TEP? I was checking Pacific indicators all morning. The 55.250 Pago Pago and Hawaii TV have been reliable indicators of openings this cycle. 55 MHz signals S1 at 0040.*

At 0049 NH6YK heard S1 on 50.110 and stations in Illinois 30 seconds later. Northern VK stations (Townsville, Sarina, Ayr) working same W areas so a big footprint at this end. Big at the other end too - an area which included MI, IL, WI, SD, NE and MS, TX and NM. MS is, I guess, on the same arc distance-wise from here. TX and NM a little shorter. The NM station was heard here from 0130 til 0155...no other stations during that time. NA was enjoying AU conditions at the time of the opening.

John VK4FNQ relayed a Packet message from Wally VK4DO: *At 0045 heard JH1WHS S9 off the side of the beam and then KA9CFD 5x9. Lasted about half an hour. Had 13 contacts, 11 in a small band through South Dakota/Iowa/Nebraska/Missouri/Illinois. The other two were in SE/TEXAS EL17 and EL07. Other grids EN13(4), EN10(3), EN31(1), EN40(1), EM48(1), EM57(1). Some weak signals but dropped out 0115. Never thought it would happen - 27 days after I heard the XE1 beacon!*

John VK4FNQ also joined in, working the following on 23/9: 0046 KA9CFD 5x5 EN40; 0049 ND0J 5x9 EN31; 0052 N9BJG 5x9 EM57; 0057 N9AZZ 5x2 EM57; 0059 KA0ABA 5x9 EN10; 0116 W7XU 5x5 EN32; 0117 N0QJM 5x5 EN32.

Interesting to note the lead-up to this opening from John's heard report which at 0015 showed video on 49.750 was S9+, at 0030 the four 50 MHz JA beacons were 599 and video and audio was strong between 55.250 and 59.250. So the indicators were something could happen. It did, with simultaneous strong opening to Japan and the US, with the S9 signals from Japan causing a few problems.

Thanks to the *VK-VHF Reflector* for much of the above information.

The USA ham radio show *Newsline's* Bill **Pasternak WA6ATF** sent *QNEWS* a draft of a story for his next Newsline report, dealing with a possible record setting VK4 to W9 set of contacts that took place on 23/9.

Only one problem. Everyone on his side of the Pacific Pond was so excited that nobody thought to start a tape recorder and capture it for posterity! QNEWS contacted 5 of the VK4s concerned, hopefully one of them supply *Newslines* with some audio.

Six metres surprised many mid-Western US hams late on September 23rd by exploding with a DX opening to end all openings. Would you believe Australia to Illinois, Indiana, Minnesota and Wisconsin, on the 50 MHz band?

It started at 0300. That's when K9APW in Wisconsin gridsquare EN53 worked VK4PU in Australian grid PG75 on 50.130 MHz SSB. K9APW says that he has been on 6 meters since the early 1970s but this is the first really solid VK to nine-land opening he has ever heard.

Nor was K9APW the only station to make the path. Jay Hainline KA9CFD, in Illinois grid EN40 reports that after listening to the aurora signals, he turned his beam west and immediately heard Australian and New Zealand stations. Jay worked VK4s FNQ, DO, ABW, NW, JH, GPS, KK and PU. He also heard VK4BRG. That station had been his one and only QSO with Australia from 1998. And to top it off JA3EGE in Japan said he heard Jay on backscatter as well. ... QNEWS.

Ted Collins G4UPS advises that **Frank PA7FF (ex-PA3BFM)** says he was giving away the six-metre band for some time. He removed his six-metre antenna and sold his amplifier so that he can devote more time to the HF bands! A very active station during the last Cycle, Frank's strong signal will be missed.

Ted's monthly report shows August as having been an active six metre month with the best day being 21/8 from 0710 to 2300 - a long day! He makes a comment: 2054 .. lots of EU activity .. now also DL and all of Europe - same pattern through to 2300. Obviously a very full band!

David Vitek sent his usual report and on 20/9 commented: 'Conditions have been terrible, little to hear. 28 MHz is dead and 50 MHz very quiet. Solar storms have closed everything down. I really miss the Es, it has just ceased to exist. The F2 is supposed to make up for it! Six months with no DX is a bit much!

His log sheet shows what he means. Virtually no signals above 49.750 MHz and those listed below have not been strong. I guess that when David reads about the US opening on 23/9, which appeared not to arrive this far south, he will not be consoled!

Closing with two thoughts for the month.

1. A smile is an inexpensive way to improve your looks, and
2. Strange how much you've got to know before you know how little you know.

73 from The Voice by the Lake – for the second last time!

ar

AMSAT AUSTRALIA

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The AMSAT-Australia net is held on 80 or 40 meters LSB (Lower Side Band) each Sunday evening (except over the Christmas/ New Year period). During the winter months in South Australia (end of March until the end of October) the net is on 3.685 MHz +/- QRM with an official start time 1000utc with early check-ins at 0945utc. During the summer months when daylight saving is in operation in South Australia (end of October until end of March) the net is on 7.068 MHz +/- QRM with an official start time of 0900utc with early check-ins at 0845utc. The times and frequencies have been chosen as the best compromise for an Australia-wide net taking into consideration seasonal propagation changes and the various state summer time variations.
AMSAT Australia newsletter and software service:
The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIRMAIL. It is payable to AMSAT Australia addressed as follows:
AMSAT Australia
GPO Box 2141
Adelaide SA 5001
Keplerian Elements
Current keps are available from the Internet by accessing the AMSAT FTP site, ftp.amsat.org and following the sub-directories to "KEPS".

Good News about Launch of Phase 3D

The most exciting piece of news about the long awaited launch arrangements for the new AMSAT 'flagship' satellite, Phase 3D. released recently by AMSAT News Service. Here is the announcement as it was sent to thousands of subscribers to the AMSAT News Service mailing list:

MARBURG, GERMANY (October 8, 1999) AMSAT's most ambitious project to date... the International Phase 3D communications satellite...has now been accepted for launch aboard an Arianespace Ariane 5 launch vehicle.

Dr. Karl Meinzer, DJ4ZC, AMSAT-Germany's President and Phase 3D Project Leader released the following statement: - "As the primary agency responsible for securing a launch opportunity for Phase 3D, I am pleased to announce that AMSAT-Germany and Arianespace have now come to an agreement calling for the launch of P3D as a secondary payload aboard the "first suitable" Ariane 5 flight.

Dr. Meinzer went on to comment that, "From the very beginning of the Phase 3D project, we considered the Ariane 5 series our primary launch vehicle. Our long history of success and mutual cooperation with both the European Space Agency (ESA) and Arianespace, coupled with our need to lift P3D into a high geostationary transfer orbit, made the Ariane 5 the unanimous choice by AMSAT."

Following standard protocol, specific details of the launch agreement were not released.

AMSAT-NA President Keith Baker, KB1SF, was elated with the latest news. "I'm very pleased to see that AMSAT-DL's negotiations with Arianespace have resulted in a launch contract for Phase 3D, and I'm delighted we are again slated to fly on an Ariane vehicle," he said.

"Following the resounding success of Ariane flight 503, the Ariane 5 has now proven itself to be a very capable launcher. When coupled with our many past successes with ESA and Ariane, I believe we now have an unbeatable combination. Once it is in orbit, the Phase 3D satellite will not only help us usher in the new Millennium, it will also signal the dawn of a brand new era for Amateur Radio," he concluded.

While both AMSAT presidents expressed optimism for an early launch of the satellite, Dr. Meinzer expressed caution that the wait for the "first suitable" flight could still turn out to be a long one. "While the launch of Phase 3D could come as early as the first half of the year 2000, we must remember that Ariane's launch manifests are continually being updated to accommodate market changes as well as the availability of other payloads. Thus, one or more changes to P3D's anticipated launch date, along with its specific Ariane 5 mission number, are a very real possibility before our satellite actually flies," he said.

Nevertheless, based on its new 'stand by' launch status, Phase 3D is slated to be delivered to the Guiana Space Centre in Kourou, French Guiana later this month so as to be ready for quick integration once Arianespace identifies a specific Ariane 5 launch vehicle for P3D's ride to orbit.

While its primary focus is on improved worldwide satellite communications, the Phase 3D satellite will also have a very positive influence on the very future of Amateur Radio.

Built primarily from donated resources, the International Phase 3D team includes participating AMSAT groups from Austria, Great Britain, Japan, Canada, Finland, Russia, Belgium, the Czech Republic, Slovenia, France, New Zealand and Hungary - in addition to the groups from AMSAT-Germany and AMSAT-North America.

AMSAT is very proud of its long tradition of excellence and the contributions it has made to the advancement of space communications, space education and the space sciences. Phase 3D will be Amateur Radio's premier vehicle to continue the quest for new communications technologies for generations yet unborn.

[end-quote from AMSAT News Service].

Those with Internet access should check the AMSAT-NA web page www.amsat.org for all the latest details of this satellite.

The web-site has many photographs showing the progress of construction and testing of Phase 3-D. You will be impressed by the design, workmanship and complexity of the project and the dedication of the project team, all of whom are captured very well in the highly detailed photographs.

I was fortunate to hear Oscar-13's PSK beacon turn on for the first time shortly after its launch. I must confess to being rather excited about the prospect of Phase 3-D achieving its design objectives.

KO-23—Signs of Life

Since going off the air with battery trouble in January this year KO-23's BBS has been silent. The satellite has occasionally been heard transmitting 1200-baud telemetry and once or twice a silent carrier.

News is scarce but it is assumed that the control stations have been carrying out tests to see if there is any possibility of re-activating this once reliable bird.

In one recent announcement the reason for the latest period of activity was deemed

necessary to alleviate extreme power problems during one of KO-23's regular eclipse periods. At that stage things didn't look very good at all.

KO-23 is out of eclipse and again active though not yet fully operational. The signal seems much weaker than when last in full operation, perhaps due to lower power being used to accommodate the battery problem.

I can easily access the satellite with 5 watts but despite many acknowledgments, no file information was downloaded.

As I watch, many callsigns are in the broadcast queue along with mine. KO-23 was by far the most popular of the current batch of digital store and forward satellites. It will be interesting to watch the outcome.

SUNSAT, SO-35 Tests Continue.

Many VK/ZL operators have had success during the scheduled periods of operational testing of this satellite. Further tests have been conducted during October and will continue for the rest of this year.

One such time-slot for Australia occurs on 06-November from 02:16 to 02:34utc when the satellite transponder will again be switched into mode 'B'.

Uplink is on 436.291 MHz (+/- Doppler up to 9 kHz). Downlink is on 145.825 MHz. FM mode is used and whilst the downlink can remain fixed during a pass, the 70cm uplink will need to be 'tweaked' to compensate for Doppler effect.

Up-to-date information on SUNSAT can be obtained from

http://sunsat.ee.sun.ac.za.

ar

SILENT KEY

Ray Kilby, VK7RK.

Ray Kilby of Launceston passed away on Monday, 4th October after a long illness. Ray was first licensed in 1936 and spent most of his operating time on CW. He occasionally ventured onto the satellites on phone as well as CW. During WWII Ray enlisted in the AIF and served in the South Pacific with the 33rd heavy Wireless group.

During the early 50's when the bands hit rock bottom Ray set himself for a commercial licence and went to sea, serving throughout the Indian and Pacific Ocean areas. When the opportunity arose he joined the Bass Strait Ferries as Sparks and served on a number of these vessels before retiring. The Tasmanian branch of the WIA expresses their sincere condolences to his XYL Jean and family.

Tom Heaney, VK6MOT

After a long period of illness, and just before his 70th birthday, Tom passed on peacefully on the morning of 26th August, 1999. He will be missed by many radio operators on the Amateur & CB bands.

73s Tom

Len North VK6KLN

Edward Cole, VK6DC

I am sad to report that Harry Edward Cole VK6 Delta Charlie became a silent key on Wednesday July 28. Everyone knew him as Henry – one of the old school of operators. He was 83 and had been ill for some eight years.

When Henry was four, he lost his father. As the eldest of four he left school at 14 to help fend for the family. He worked at anything he could get, being the middle of the depression. He worked for a butcher, in a fruit shop and on a farm.

He studied part time and obtained a Diploma of Electrical Engineering from the old 'Perth Tech' now Curtin University.

He joined the Air Force as an Electrical Fitter. He also worked at various times running power-houses at mines in Wiluna and Kalgoorlie.

Henry retired at 58 from a position of Systems Operator at East Perth Power Station and very proud he was of that job too, often willing to show his friends over the installation.

He built much of his early amateur gear and it was a delight to behold. When SSB succeeded AM he purchased a Yaesu FT101, which he lovingly referred to as his "FT one – eleven" (no doubt from his Air Force connections).

He powered this into an 80-metre dipole between two A frame masts in his backyard in Como. Recently he was mostly active on two metres and listened to the news on Sundays on his hand-held. He was a very loyal member of the Wireless Institute, attending meetings regularly until he was just too ill to go.

Henry found in 1960 that I had attended the first two JOTAs with Jim VK6RU and I was invited to inspect his station. To me, knowing only 12 volt electric trains, that experience was an absolute revelation. Lined up on a table under the back window, with cables through the louvres, was a number of "units" (in obviously the correct order!) for which there was a significant ritual for changeover from Transmit to Receive (and also, obviously, in the opposite direction!).

I seem to remember five or more units, although there may only have been five or more switches and the routine went something like "Okay old man, thanks for that, please stand by a time while I switch all this gear." Whereupon the mike went onto the bench and Henry literally danced down the bench to throw a series of switches, some up, some down, until (as I now suspect) the mike gain was killed, then heaters, power amplifier and transmitter and finally the receiver (with Geloso vernier tuner?) switched on for an answer to return from the contact. Wonder of wonders, I was like a boy in a lolly shop.

Later (1970) when I could not get over the 12v dc obstacle Henry suggested I could look at direct current as "nought frequency alternating current". There was no way current could pass through an open circuit (capacitor) and I knew that current would pass through a coil – after all I was using such devices as point motors. Henry thus fixed that notion and I am eternally grateful.

Henry and Glad were married for 54 years and my family saw a fair bit of them and their family of Owen, Murray and Julie – and they us, living so close. I have lost a good friend and amateur radio has lost a good operator.

Vale Henry VK6 Delta Charlie

Peter Hughes VK6HU

and the VK6 Divisional Council.

The WIA also notes the passing of the the following members.

(John) Higson VK3ABW

(Charles) Orr VK4CHO

ARDF

Ron Graham VK4BRGPO
Box 323Sarina Qld 4737

I intended to follow up the last column,on the ARDF converter, with some schematics of the various sections that comprise that converter. However, these are quite standard, and are available in numerous textbooks such as the ARRL Handbook.

Referring to the September column, which discusses the essential design of the ARDF converter, we note it consists of:

a) an oscillator — crystal controlled or free running. It could use bipolar or FET devices. CMOS IC's can be used for crystal controlled oscillators, the common 555 timer could be used for a low frequency free running oscillator with the value of the R and C timing components calculated from the readily available 555 timer design data.

b) an optional buffer — not mentioned previously. It gives the obvious advantage (particularly with a free running oscillator) of isolating the oscillator from the mixer stage loading and thus the possibility of "pulling" the oscillator frequency with adjustments around the mixer stage, eg adjusting the attenuator control.

If an emitter or source follower creates the buffer, the emitter or source resistance may be formed by the resistive element of the attenuator control.

So now we have an oscillator stage of your choice, say capacitively coupled to the base or gate of a buffer stage. The moving arm of the attenuator control, forming the emitter or source resistor, feeds the variable level oscillator signal to the mixer stage.

c) a mixer - also mentioned in September, ranging from a simple diode (1N4148's work OK at 2 metres) to complex arrangements of balanced mixers. Initially these appear to offer advantages, but they do need the complexity of input and output RF transformers. These may be relatively simple devices of just a few turns of wire on a small ferrite bead. The simple single diode mixer is preferable given the distinct possibility of accidentally transmitting through the ARDF converter, (if a handy talkie is used) and thus zapping the mixer diode(s).

Naturally, tied up with the mixer stage, is the necessity to have fitted suitable coax sockets. One for the antenna -the mixer input. The other to connect to the radio -the mixer output.

The ARDF converter should be built into a metal box to provide the necessary shielding. So, with many and varied design arrangements, its a good home brew project.

A couple of years ago, I built up an ARDF converter design along these lines. A free running oscillator on 500 KHz feeding a buffer stage followed by a simple diode mixer. It is all built into a small diecast box measuring 90 x 38 x 30mm and powered by a single internal AA cell.

The unit is quite a neat fit into the smallish die cast box and some quite critical fitting is required so its unsuitable as a homebrew project. I would consider organising kits if the demand warrants the work involved.

Reminiscence

I was pondering my first involvement with direction finding. In 1956 I became a member of the Air Force Reserve. With no private pilot's licence flyimg was out so I opted for Radio Technician (Air). The "air" bit meant working with aircraft equipment . I recall amazing myself and the hierarchy by obtaining a 98% pass at the trade test.!

A couple of Wirraways, a couple of Vampires and a number of Meteors made up 22 Squadron. The jets, and the later Neptunes, were all fitted with the ARN-6 radio compass, which was the only navigation aid in Vampires and Meteors.

They took bearings on mainly:

a) the beacons in the 200 to 400 KHz band were known as NDBs, which were installed at or near most airports.

b) medium wave broadcast stations, of which there are many in existence and spread nicely around the country.

This gave the facility of simply "homing in" on the CORRECT beacon.

More complex navigation was effected by noting time when say, abeam of a beacon. This intercept with the aircraft track gave a position and/or confirmed distance made good. Cross bearings, or better still, triangulation could also determine position.

Equipment

a) the actual receiver -mounted at some convenient place in the aircraft. It also contained the loop control circuitry.

b) the control unit -mechanically tuning the remote receiver plus the other necessary controls and an S meter.

c) the loop antenna -mounted on the centre line of the fuselage (so there is a symmetrical expanse of metal on either side) either at top or bottom.

d) the sense antenna -a raked metal whip about half a metre long fitted, from memory, just behind the loop.

e) the radio compass indicator -calibrated 0 to 360° and coupled by Selsyn motors to follow the loop's position.

A function switch on the control unit allowed for "loop", "sense", and "auto" operation. Another switch allowed for manual loop rotation when in the "loop" position. So it was possible to manually look for nulls in the signal and read out the bearings from the indicator. From memory, in the "sense" position, only the sense antenna was used, so the unit just functioned as a straight receiver.

In the "auto" mode, the unit functioned completely automatically. It was only necessary to tune, and identify, the required station, as the system would look for the peak and stay peaked at that position if the aircraft changed course. The bearing to the station could be read off relative to the aircraft heading.

Naturally, the "auto" function was used almost exclusively!

Technical note

Using a loop antenna for direction finding involves rotating that loop through 360°. Two nulls in the signal strength, 180° apart should be obtained when the axis of the loop is aligned with the direction to the transmitting station. So one null is the direction "to" the station, the other null is the direction "from" the station.

In many instances, from a navigational point of view, it is apparent which null is which. In some instances, it may not be apparent, so what is often known as the 180° ambiguity results.Enter the "sense" antenna! This is generally a simple whip antenna which has its output mixed with the signal from the loop antenna. With the correct phase relationship and amplitude between these two signals, a cardioid response is obtained as the loop is rotated. This heart shaped response has a peak at 90 degrees to the axis of the loop. Thus, with a sense antenna and the phase shifting/level adjusting circuitry, the 180° ambiguity is resolved.

CONTESTS

Ian Godsil VK3DID
57 Nepean Highway, Aspendale 3195

Contest Calendar November 1999 - January 2000

Nov 1-7	HA QRP Contest	(CW)
Nov 6/7	Ukrainian DX Contest	(CW/SSB)
Nov 7	High Speed CW Club Contest	(Jan 99)
Nov 12/14	Japan Int. DX Contest	(SSB) (Dec 98)
Nov 13	ALARA Contest	(CW/SSB)(Sep 99)
Nov 13/14	Spring VHF-UHF Field Day	(CW/SSB)(Oct 99)
Nov 13/14	WAE RTTY Contest	
Nov 13/14	OK/OM DX Contest (	CW)
Nov 20/21	LZ DX Contest	(CW)
Nov 27/28	CQ WW DX Contest	(CW)
Dec 3/5	ARRL 160 Metres Contest	(CW) (Nov 99)
Dec 4/5	EA DX Contest	(CW)
Dec 11/12	ARRL 10 Metres Contest	(CW/SSB)(Nov 99)
Dec 18	OK DX RTTY Contest	(Nov 99)
Dec 18/19	Croatian CW Contest	
Dec 18/19	International Naval Contest	(CW/SSB)
Dec 19	RAC Canada Winter Contest	(CW/SSB)
Dec 25/26	Original QRP Contest	(CW)
Dec 25/26	Stew Perry Topband Distance Challenge	(CW) (Nov 99)
Dec 26-Jan 11	Ross Hull Memorial VHF-UHF Contest	(CW/SSB)(Oct 99)
Jan 7-9	Japan International Low Band DX Contest	(CW)
Jan 8/9	Summer VHF-UHF Field Day Contest	(CW/SSB)
Jan 11	Ross Hull Contest - Final Day	
Jan 16	HA DX CW Contest	
Jan 28-30	CQ WW 160 m DX Contest	
Jan 29/30	REF CW Contest	

Thanks this Month to VK3KWA ARRL UBA ZL2BIL ZL1BVK

Results ACORNZ ZIP Contest July 1999

from Bill ZL2BIL, Contest Manager

PHONE

(Name\call\score)

Kevin	VK5SR (Club stn)	181	
John	VK5NJ	125	
John	ZL1ALZ	91	
Bill	ZL2AVL	60	
Brian	ZL2AJS	57	
Warren	ZL3TX	50	
Leo	ZL2AJB	47	
Denys	ZL2AWH		46
Ian	VK3DID	17	

CW

John	VK5NJ	91
John	ZL1ALZ	76
Leo	ZL2AJB	65
Neville	VK2QF	57
Ian	VK3DID	21
Denys	ZL2AWH	15

Results WAITAKERE SPRINT 1999 (VKs only)

from Alex ZL1BVK Contest Manager

(Place\	call\	score\	award)
CW			
1	VK5NJ	28	1st O/A
2	VK2QF	15	2nd VK
3	VK23DID	14	3rd VK
PHONE			
1	VK5NJ	51	1st O/A
2	VK5SR	40	2nd VK
3	VK7JGD	31	3rd VK
4	VK7LUV	23	
5	VK3DID	12	
6	VK7JAB	3	
COMBINED CW/Phone			
1	VK5NJ	158	Sprint Champion
12	VK3DID	52	

ARRL 160 Metres Contest

2200z Fri 3 December - 1600z Sun 5 December

Object: for DX stations to work as many W/VE stations as possible. MODE: CW. CATEGORIES: Single operator; multi-operator. SECTIONS: QRP (max 5w o/p); low power (max 100w o/p); high power (100w+ o/p). EXCHANGE: RST. SCORE: 5 points per QSO. MULTIPLIER is total number of W/VE sections plus VE8/VY1 (total 77). FINAL SCORE is total QSDO points X total multipliers. SEND LOGS by mail to: ARRL 160 Metres Contest, 225 Main Street, Newington, CT 06111, USA, by 2 January. Logs may be sent by e-mail to: <contest@arrl.org>

ARRL 10 Metres Contest

0000z Sat - 2400z Sun 11/12 December

OBJECT: to work as many stations worldwide as possible. Maximum operating time is 36 hours and listening time counts as operating time. MODES: CW; Phone; Mixed. CATEGORIES: as for 160 Metre Contest above. SEND RS(T) plus serial number. W/VE will send RS(T) plus state or province. CW entrants should stay below 28.3 MHz and avoid beacon frequencies. Entrants in mixed mode may work the same station on each mode. SCORE two points per Phone QSO, four points per CW QSO and eight points per CW QSO with US novice or technician stations signing /N or /T (28.1 - 28.3 MHz only). MULTIPLIERS are 50 US states; District of Columbia (DC); Canadian provinces; DXCC countries except Canada and US; ITU regions (/MM and /AM QSOs only). Multipliers may be counted separately for each mode. FINAL SCORE is total QSO points X total multipliers. SEND LOGS as above ("ARRL 160m Contest") by 13 January. Include dupe sheet for 500+ QSOs.Stew Perry Topband Distance Challenge

1500z Sat - 1500z Sun, 25/26 December

This is a major challenge to copy weak signals through QRN. BAND is 160 metres. EXCHANGE is a four-character grid square (see Amateur Radio, December 1996, p16 for details of how to work out your grid square and distances). RST is optional, but if given MUST be accurate. POINTS for each contact depend on the distance between the two stations, which is computed by taking the distance between the centres of the two grid squares. Claim a minimum of one point per QSO and add one extra point of each 500-km distance. [Eg: a

SPOTLIGHT on SWLing

by Robin L. Harwood VK7RH
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The conflict in East Timor has changed since the arrival of the Australian-led INTERFET troops to restore law and order there. As you probably are aware, relations between Australia and Indonesia have cooled with daily demonstrations in Jakarta outside the Australian Embassy.

By the time you are reading this, Indonesia will have elected their president. Our external service has commenced using transmitters in Taiwan to get an effective signal into western Indonesia. Currently they are reportedly using 11550 kHz between 2300 and 2400 UTC and again between 0900 and 1000 UTC with 250 kW. It is also interesting that after Radio Australia signs off at 1000; The Taiwan senders are used by Radio Portugal International for a broadcast to East Timor in Portuguese and Timorese.

It is strange indeed that the facility near Darwin is not being utilised and there apparently are no plans to re-activate it. The senders did have excellent signals into SE Asia. Unlike the other senders the Darwin site was not privatised. However they are being maintained for instant readiness.

Ecuador

In late September a volcano erupted close to Quito, the Ecuadorian capital, high in the Andes Mountains and home to evangelical broadcaster, HCJB. Although the senders at Pifo were not affected, the studios in Quito were closer to the volcano and plans were made to evacuate studio personnel if required. Also HCJB has changed the frequency of their South Pacific release from 15115 to 11755 kHz at 0700 UTC.

The Stafford Broadcasting Society will be hiring time on Merlin Network One every Friday night from Oct-01 1900-2000 on 6010 via Ascension Island. The on-air name will be Imagination and the station will feature an hour of soft rock from bands such as Barclay James Harvest and Pink Floyd. They have a website at http://www.imagination.clara.net/index.html. The address is PO Box 346, Stafford ST17 4AF, United Kingdom. The broadcasts will air for an initial period of six months. (World DX Club / Mike Barraclough via Glenn Hauser).

Wales is the latest station to be using the Merlin facilities. According to the Electronic DX Press, Wales Radio International is on Saturdays from 1230 to 1330 on 17650 kHz. This would be a new radio "country" for some. They are also supposed to be on from 2030 to 2100 on 7235 kHz. A third release on 9795 also on Saturdays at 0200 would not be audible in our summer months. (Joe Hanlon, PA, USA, in World of Radio via Glenn Hauser).

There is a new American station on shortwave putting in good signals into Australia. It is yet another "religious" station based in North Carolina. It is WTJC and I am hear it under a radio-teletype station on 9370 kHz peaking at 0730 UTC till s/off at 0930. The programming was Southern Gospel music interspersed with sermons.

The Voice of America in Washington DC is putting excellent signals with their "News Now" format on 6160kHz from 1100UTC. I do not know the site as some of the Filipino senders were recently decommissioned.

Radio Ukraine International in Kiev recently dropped their English programming to Australia on 21520kHz, although they continue on a lower frequency which does not propagate well. The reason apparently was a rationalisation of the various sites within the Ukraine

The Southern Cross DX Club in Adelaide SA has regrettably folded after no nominations were received at its AGM at the end of August. This leaves only one club left in Australia; the Australian Radio DX Club Inc presently based in Sydney. Sadly SWL clubs in other parts of the world are also in decline. Interest in radio monitoring has not excited today's youth, primarily interested in the Internet with instant communications. This also has affected interest in amateur radio as reported recently by Peter Naish, our Federal President when he recently addressed a combined meeting of the Northern Branches of the Tasmanian Division in Deloraine. Although interest may be waning, it can quickly swing upwards again with an improvement in propagation or an international crisis. East Timor relies heavily on shortwave radio because the local infrastructure was destroyed.

Well that is all for this month, the second last of this millenium.

Until then, the very best of monitoring and 73 from Robin L. Harwood VK7RH.

RT

CONTESTS

station 1750-km away will count for four QSO points.] No additional distance for long path is allowed. If you work a station that does not know its grid square, you may claim only one point for the QSO.
FINAL SCORE is the total number of QSO points. No country or grid square multipliers, but stations using low power (6 - 100w o/p) multiply their score by two, and stations using QRP (less than five watts) multiply by four. SEND LOGS postmarked by 26 January to: BARC, PO Box 1357, Boring, OR 97009, USA.
Logs on disk in ASCII format are welcome, or logs may be sent by e-mail to: <tbdc@contesting.com> Judges' decisions are final.

OK DX RTTY Contest

0000z - 2400z Sat, 18 December

BANDS: 80 - 10 m. MODE: RTTY - BAUDOT. CATEGORIES: Single operator single band; single operator all bands; multi-operator all bands. CALL: CQ OK Test. EXCHANGE: RST plus CQ zone. SCORE: On 20/15/10m one point for own continent and two points DX. On 80/40m three points within own continent and six points DX. MULTIPLIERS: OK stations plus DXCC countries on each band. FINAL SCORE is total QSO points all bands X total DXCC countries all bands X total OK stations all bands.

Special Note:

Please support the ALARA and VHF-UHF Field Day Contests (see dates above).

Only your support will make these really worthwhile.

Thanks and 73 de Ian VK3DID

OVER TO YOU

What Price Amateur Radio?

Every man has his price. Indeed, every one of us has a price for everything that is negotiable!

A statement as such begs the question — as Hams, how many dB's are we prepared to lose in order to maintain the status quo?

THAT's the bottom line and, we need to be completely honest with ourselves, in order to answer that fundamental question.

Of course, it's all about priorities and the writer places Ham Radio close to the top of the list - hi. All Hams need to be a cohesive force in order that we survive the pressures being placed upon us by commercial interests.

The writer believes that (a) we need the WIA as a national voice to provide us with qualified representation, and (b) we need the state divisions to provide a degree of "local government" for our regional affairs.

The arguments being offered to abandon the federal or state offices are fraught with danger. If dollars are behind these ideas then we should go back to square one and ask ourselves... What Price Amateur Radio?

MAX MORRIS VK3GMM
PO BOX 222 RYE, VIC 3941
Ph (03)5985 2671

Misspelling of Names on AR Magazine.

I refer to your editorial in the September, 1999 issue.

I really cannot see what the fuss is about spelling members names correctly. My name has been mis-spelt for the last few years. I made the corrections on the subscription renewal slip last year but it appears that the NIA nas happy to take the money but not make the change.

Therefore, it would appear that individuals are no longer important to the Institute, so why worry about a few mimor things like mis-spelt names.

To change the subject, when can members expect to receive Amateur Radio Magazine at the begining of the month again. It is a real pain waiting for the month to be almost over before getting AR in the mail.

Robert Demkiw VK2TG

(I have bowed to your wishes and left the spelling mistakes in your letter Robert. Apologies for past errors. We are trying to accelerate and streamline our production schedules, but "time is money"! Ed.)

More Packet Please

I notice that AR has been void of packet radio articles for a while now. Would you like some articles?

Regards Steve VK2KFJ

(Yes Please Steve! We can only print what we receive. Please note that we have a Packet item for you this month on packet teletext. I hope you enjoy it. Ed.)

There Ain't No Gain In Bits Of Wire!

I wrote this in haste and anger but I think it should stir up some discussion on the subject. I hope you can use it?

Why is it that seemingly sane and rational people lose the plot when it comes to antenna gain? I hear talk of 'frying the pigeons' with the latest dish or yagi.

In fact only this morning I heard of two otherwise sane hams who were about to set up an experiment with a (?)Watt 2.4GHz transmitter into a ~30 dBi dish to see if they could boil an egg!

Let me say it one more time, the gain displayed by antennas is EFFECTIVE gain! It looks to the distant listener AS THOUGH you were running 1000Watts instead of 1 Watt. It does NOT mean there is 1000Watts coming out of your antenna. Yes, it is focussed into a nice narrow beam but it's still only 1 Watt out!

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The response to our first, market-testing ad was so great that we have had to re-think how we are going to do this. Also the differing requests from various people have also caused a re-assessment. The response means an even better, even more inexpensive way can be arranged.

So, for those still waiting on a detailed reponse, it's coming and it will be better for you. For those who didn't enquire yet, now is the time.

Phone (03) 9428 3458 Fax (03) 9428 4242

newsl@webtime.com.au

Technical Correspondence

Linear Amplifier vs Svetlana Tubes

I seek advice on using Russian built Svetlana 572B tubes in a Yaesu FT 2100 Z Linear Amp. The Linear came from a deceased estate already fitted with these tubes. Investigation showed someone had tried unsuccessfully to make it operational. The resistors on the parasitic chokes were burnt out.

They were 22 R 3W Carbon resistors, which are not exactly a common item. We got hold of several from the Yaesu agent but quickly blew them out when we endeavoured to get the set working. The tubes have significantly more gain than the originals and the unit "takes off".

I would appreciate any advice from anyone who has solved this problem. A number of friends are watching with great interest as they will one day want the answer. So please, HELP from anyone that knows the secret.

Graham Jackson VK3GBJ PO
Box 39 Upper Beaconsfield 3808
Tel (03) 5944 3554
FAX (03) 5944 3554

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IONOSPHERIC UPDATE

Evan Jarman VK3ANI
34 Alandale Court, Blackburn VIC 3130

Solar activity

The graph of observations this quarter shows the rise and fall in solar activity with the solar rotation quite distinctly. It also shows how parlous solar predicting can be.

Solar activity was predominantly in the latter half of July. Of the 23 flares in July, 5 were in the first 5 days. The remainder were all in the more active latter half. However, just to be different, shortwave fadeout alerts (2) were issued for periods within the first 2 days. There were numerous coronal mass ejections in the latter half of the July.

August saw a lull in solar activity peaking at the beginning and end of the month. The graph of observations shows this very distinctly. Stronger flares were also back with 2 class X flares (X1.4/1B @ 2125UTC 2 Aug and X1.1/2N @ 1805UTC 28 Aug). A class M9.8 solar flare @ 1418 on 20 August might have made the grade if the solar region it came from had merged earlier with the region that subsequently produced the latter X flare. This latter class X flare, together with some middle strength class M flares from this merged region, gave rise to greater geomagnetic activity and prompted the Ionospheric Prediction Service to issue a shortwave fade-out alert.

September was markedly lower as the graph of observations shows. While a pattern of higher solar activity as shown in the previous two solar rotations was predicted; it didn't happen.

On 2 September 1999, a revised prediction for the solar cycle was released. I am currently transcribing the data to a graphical form for publication next quarter.

Ionospheric activity

Conditions over the quarter were fairly normal, except in September when the low solar flux combined with a sustained increase in geomagnetism meant that MUFs were markedly depressed. (see graph) . Note how the median T index line for the month has fallen away from the predicted T index valuewhich is actually the one used in the HF Predictions.

Geomagnetic activity

It is believed that activity around the 16-20 August is related to a coronal hole. The increase in activity around 23-24 August is tied to the class M9.8 solar flare.

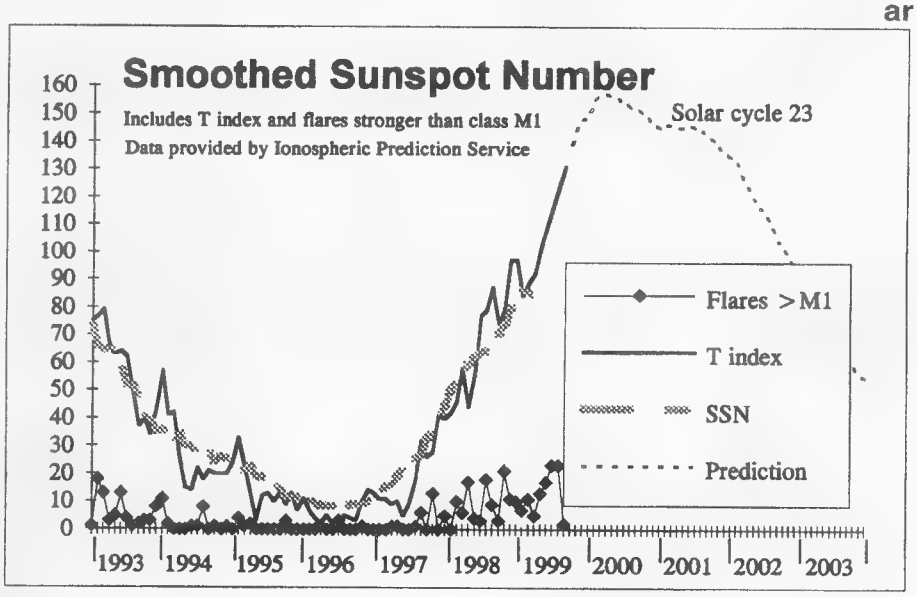
Activity rose during September although this increased level was not sustained over the moth. There were three distinct periods of higher activity.

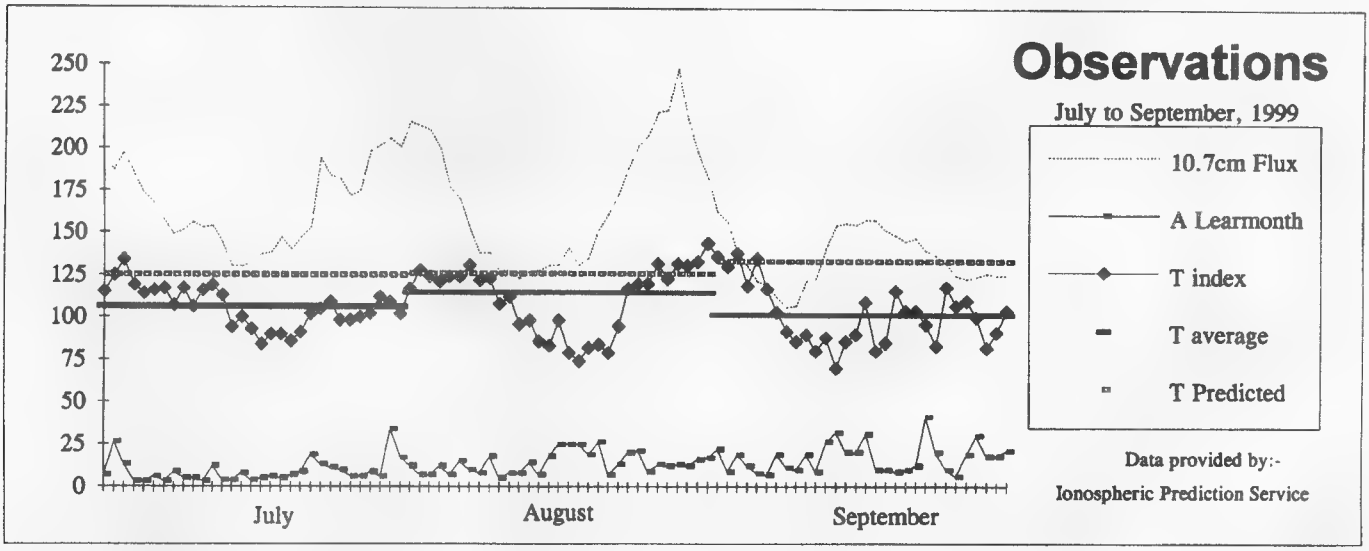
The first was from 12-16 September and is believed to be associated with a coronal hole and coronal mass ejections. There were three geomagnetic impulses in this time; 0400UTC 12 September, 0700UTC and 2019UTC on 15 September. The two on 15 September being sudden.

The second period, which was around 22-25 September, had major to severe storm level activity. It is believed to have been caused by a coronal mass ejection.

The third period, around 26-30 September, is believed to be coronal hole related and was not as severe.

ar

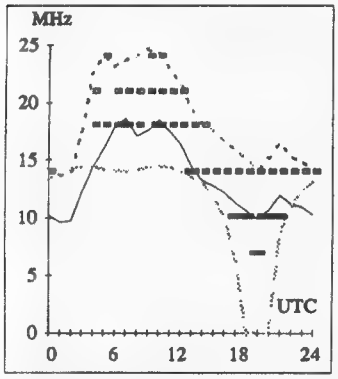




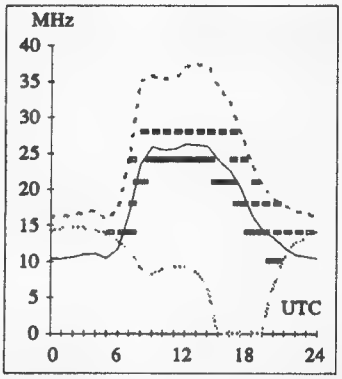
HF PREDICTIONS

by Evan Jarman VK3ANI
34 Alandale Court, Blackburn Vic 3130

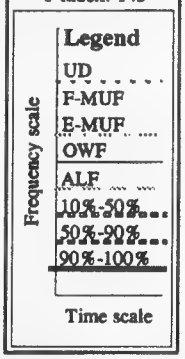
Adelaide-Capetown 226
Second 4F6-15 4E0 Shor 10154 km



Brisbane-Dublin 335
First F 0-5 Shor 16670 km



November 1999
T index: 145



These graphs show the predicted diurnal variation of key frequencies for the nominated circuits. These frequencies as identified in the legend are:-

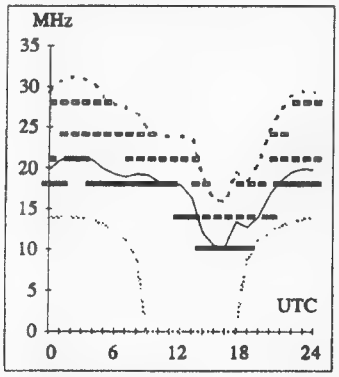
- Upper Decile (F-layer)
- F-layer Maximum Useable Frequency
- E-layer Maximum Useable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies; when useable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

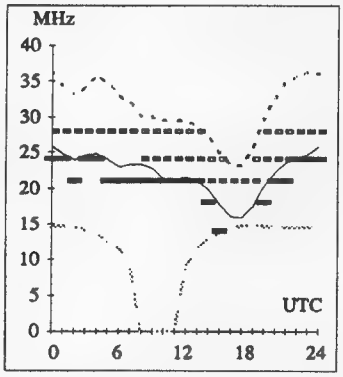
These predictions were made with the Ionospheric Prediction Service program: ASAPS version 4.

ar

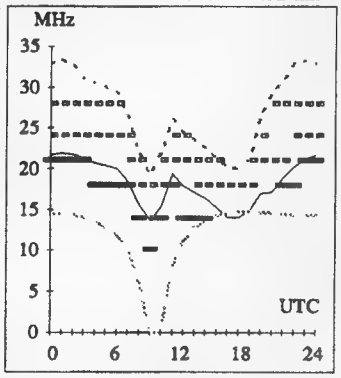
Adelaide-Honolulu 57
Second 4F7-15 4E0 Shor 9160 km



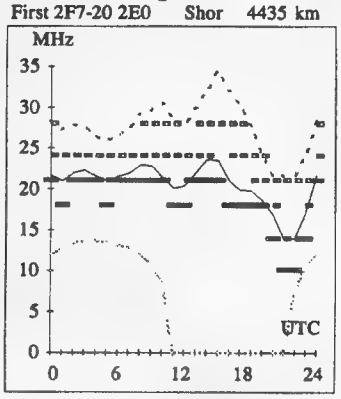
Brisbane-Lima 122
First F 0-5 Shor 13056 km



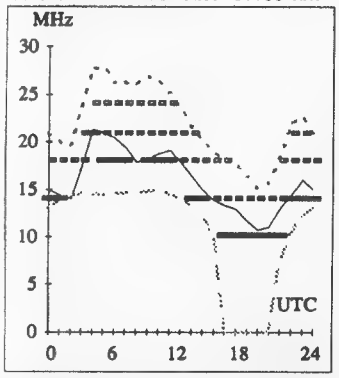
Canberra-Barbados 123
First F 0-5 Shor 16232 km



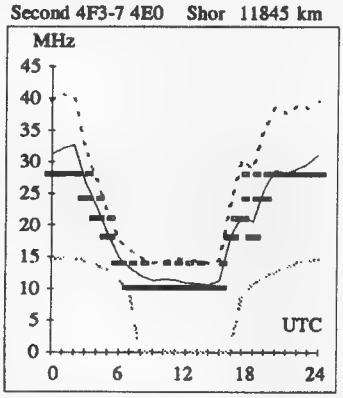
Darwin-Bangkok 310
First 2F7-20 2E0 Shor 4435 km



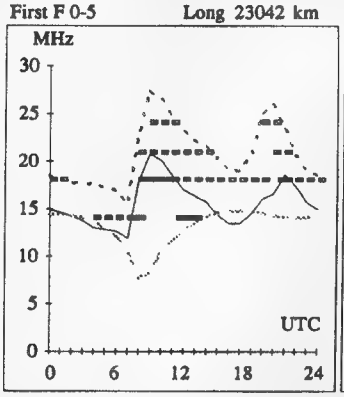
Adelaide-Lusaka 246
Second 4F4-12 4E0 Shor 10788 km



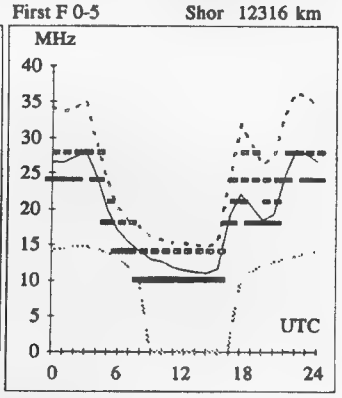
Brisbane-Seattle 44
Second 4F3-7 4E0 Shor 11845 km



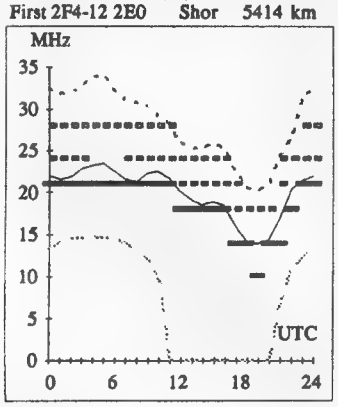
Canberra-London 136
First F 0-5 Long 23042 km



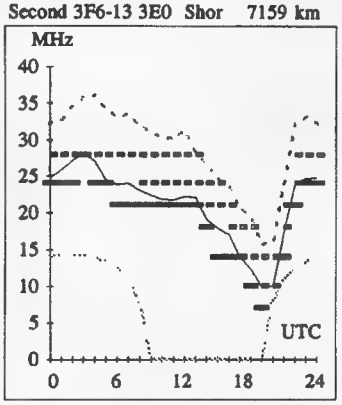
Darwin-San Francisco 54
First F 0-5 Shor 12316 km



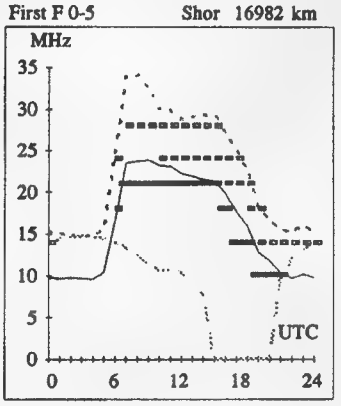
Adelaide-Singapore 311
First 2F4-12 2E0 Shor 5414 km



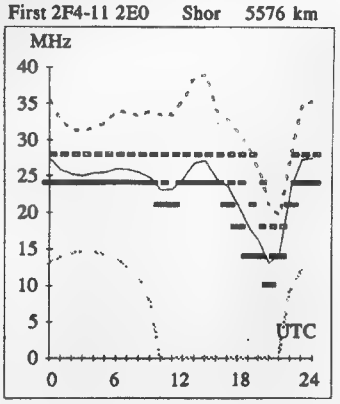
Brisbane-Tokyo 348
Second 3F6-13 3E0 Shor 7159 km



Canberra-London 316
First F 0-5 Shor 16982 km

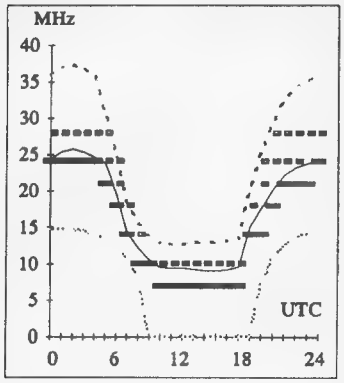


Darwin-Seoul 356
First 2F4-11 2E0 Shor 5576 km

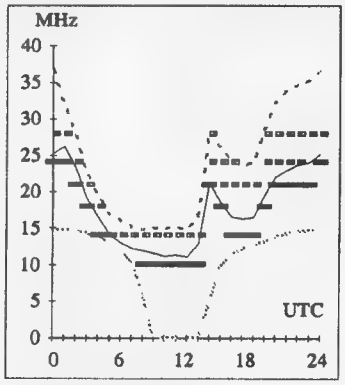


HF Predictions

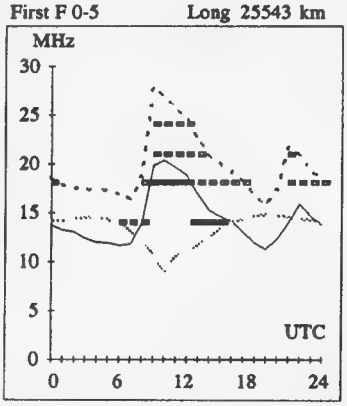
Hobart-Anchorage 28
First F 0-5 Shor 12871 km



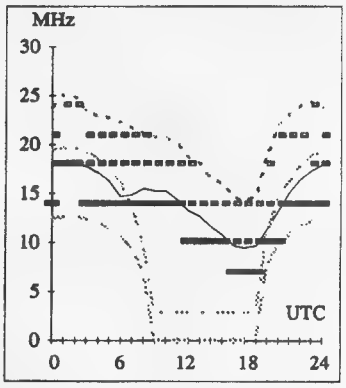
Melbourne-Chicago 67
First F 0-5 Shor 15569 km



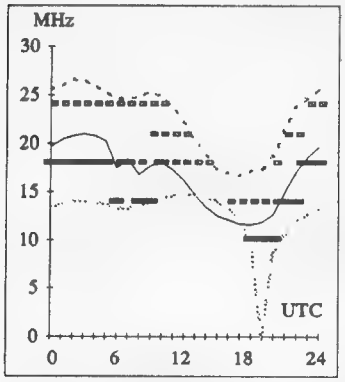
Perth-London 133
First F 0-5 Long 25543 km



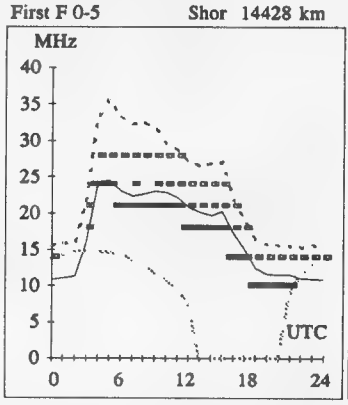
Sydney-Invercargil 139
First 1F10-19 1E0 Shor 2017 km



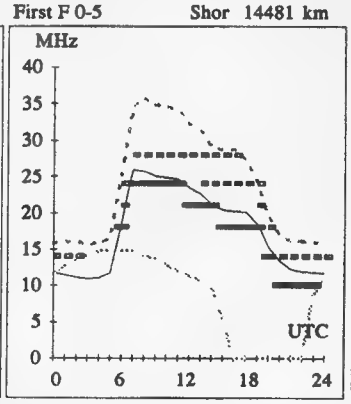
Hobart-Dakar 209
First F 0-5 Shor 16556 km



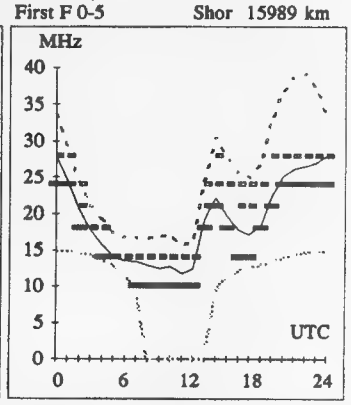
Melbourne-Moscow 316
First F 0-5 Shor 14428 km



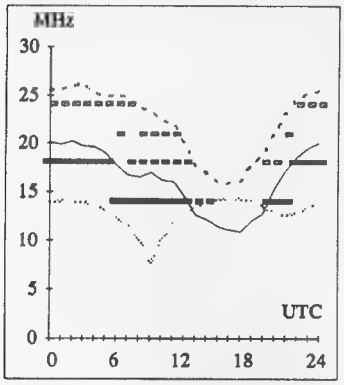
Perth-London 313
First F 0-5 Shor 14481 km



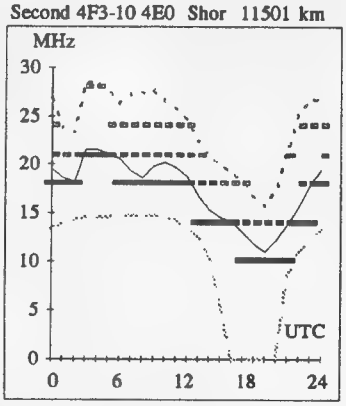
Sydney-New York 66
First F 0-5 Shor 15989 km



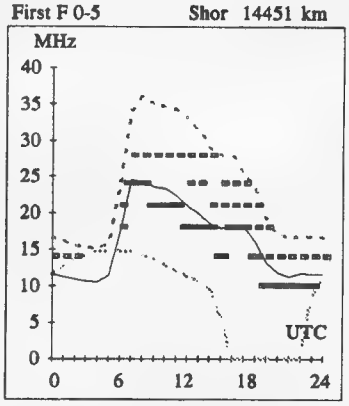
Hobart-Montevideo 161
Second 4F7-10 4E0 Shor 11044 km



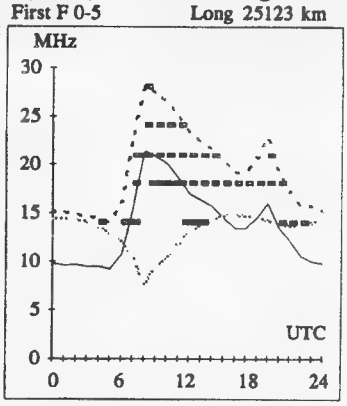
Melbourne-Nairobi 258
Second 4F3-10 4E0 Shor 11501 km



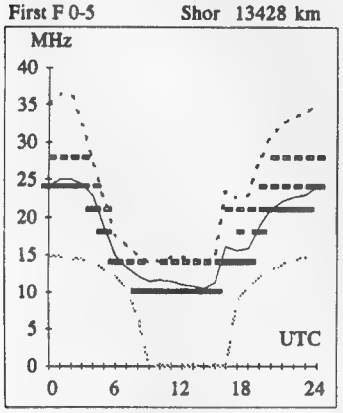
Perth-London 313
First F 0-5 Shor 14451 km



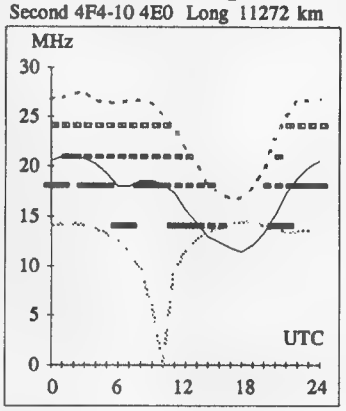
Sydney-St Petersburg 143
First F 0-5 Long 25123 km



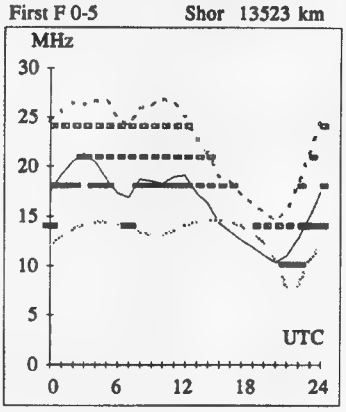
Hobart-Vancouver 49
First F 0-5 Shor 13428 km



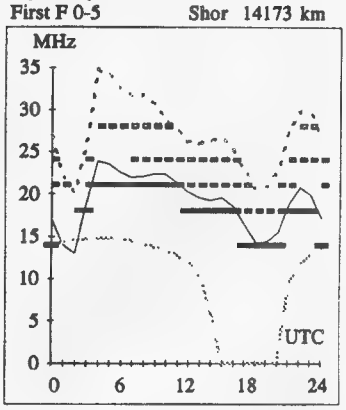
Melbourne-Santiago 150
Second 4F4-10 4E0 Long 11272 km



Perth-Rio de Janeiro 203
First F 0-5 Shor 13523 km



Sydney-Tel Aviv 287
First F 0-5 Shor 14173 km



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YAESU FT707 HF Transceiver S/n 060310 and YAESU FV707DM external VFO S/n 040248 $650, ICOM IC730 HF Transceiver S/n 01254 $500, YAESU FT209RH 2m. H/held S/n 180659 with speaker mike $100, MFJ-1224 RTTY/CW Computer interface $100. Neil VK2KCN QTHR - Phone: 0418 243 880 b/h OR, (02) 9894 5678 after 7pm - E-mail: neilcorp@hotkey.net.au

Internet Flea Market - see the Waverley Amateur Radio Society's web site for club and members items for sale and wanted. Its URL is http://www.zip.com.au/~sb/wars/w_flea.htm

YAESU FT 209 RH - 2 Metre Handheld XCVR - 140-150 MHZ - 5 WATTS output - Case-Instr. BookK - VGC - $ 190.= O.N.O. PETER VK2BPO QTHR - PH: 02 - 9713 1831

YAESU FT-101Z HF TXCVR S/N 9C020308. G.C. Spare PA valves. Built in fan. DC-DC converter $250.00, Kenwood TR-2400 2m FM TXCVR S/N 0115038. Leather case, spkr mic, AC charger, car charger. G.C. $120.00 Kenwood AT-200 antenna tuner S/N 840855. $120.00 Dipole antenna kit 80, 40, 20, 10m. Never used. $50.00 VK2KRQ John (02) 4369 0458 12A Rickard Road Empire Bay NSW

Compaq 486 Prolinea computer, includes keyboard but no monitor, $40, 386 Compaq Lite mono screen Notebook in docking station $40, Compaq 486Dx Contura mono screen Notebook with 1.4Gb harddisk $450, ono. VK2QF, QTHR, PH: 02 6373 8624 or email: vk2qf@winsoft.net.au.

BOOK:"Radiotelegraph and Radio-telephone Codes Prowords and Abbreviations." 2ndEdition.$16posted Australia 90 Pages. Q,X,Z Codes, 97 Phonetic, 20 Morse Codes Phillips, Myer, 10,11,12,13 Codes. Much other info. Internet - http://www.nor.com.au/community/sarc/phonetic.htm VK2JWA, John W. Alcorn. QTHR. 02-66215217 jalcorn@nor.com.au

Kenwood SSB Transceiver type TS520S S/N 710532531. Jim VK2DER 02 9453 2531

Kenwood TS440S inbuilt ATU $900. ICOM IC725 with IC120 aumatic ATU $900. ICOM IC3200A 2m and 70cms 25W $400. Kenwood TM20IA 144mhz 10W $190. YAESU YC55D frequency meter to 200mhz $90. VK2ABU 0293281261 (AK)

FOR SALE VIC

Kenwood R5000 HF comm. RX $700 AoR AR2002 wideband scanner $120. Both

GC/GWO Damien VK3RX (03) 5427 3121

One 90ft wind up telescopic lattice tower with base. Good condition. Phone Dave - VK3JKY (03) 59774808 for further information.

YAESU FT900 S/N 4N090707. All HF bands proc. Keyer Collins filter. Near new in carton. Bonus Drake L.P.F+ speaker. All $1450. YAESU FC902 A.T.U. All HF bands 160-10m 25/250/500 watts. Dual meters 4pos. Anti-load sw-50 OHM 400W external load resistor V.G.C. $100. Antenna Hy-Gain TH3JR 10/15/20m $100. Antenna Cushcraft (ARX2B) 2m.7 DB Gain $50. Andy VK3UJ 9726 8879

Marconi sig. Gen No.18 1.5-220mhz AM.FM.CW $100. Transformer H.D. Tapped, 45v.55v.60v.6A.cont. 18A.int. $40. Paton H.D. Rotary switches 4 pole 3 position 2 bank $15. 2 pole 6 position 2 bank $15. 2 pole 5 position $15. Latter includes two normal wafers at rear. All switches unused with H.D. spring loaded contacts, ideal linear amp bandswitch. Merv. VK3AFO Wodonga 02 6024 2537

Kenwood TS.870 Topline HF xcvr with inbuilt ATU handheld mic and DCPS52 pwr supply. Very good condition $2550. Power supply S/N 507 00115 TS870 S/N 8030020. Jim 03 9367 6920

KENWOOD H/held TR2600a 2mtr txcvr 3w c/case headset chrgr-stand SN5022246 $75 ono. IC 28A/E 2mtr txcvr 25w extended RX range, SN14889 $275 ono. Both ex cond. full docs and circuits. Ryobi Drill-driver HB10AR 180rpm, chuck, sockets, bits, variable clutch, ex cond. Keith VK3AFI QTHR 03 5221 3658.

FOR SALE QLD

Deceased Estate

Lot1 ICOM Transceiver 735, AT500 Automatic tuner, PS50 power supply. Lot 1 total $1200. Lot 2 Hi-Gain 14 Beam, KR400 rotator with controller, tower, winch and cable. Lot 2 total $800. On behalf of lat VK4WJB. Ted VK4OW QTHR 07 41252039 or Pat 0741281752

Rotator YAESU G400RC clamp GC038 7 strand cable. TE33 Tet-emtron HF beam .3m All. Mast co-ax $450. Surfers Qld 4226. Ph 07 5578 8052

Three bedroom house on 1.5 acres. 5 years old. Ensuite in main bedroom. Built in robes. Hills cyclonic telescopic tower with tilt over. **Five element beam** plus eleven element two metre beam also 40 and 80 metre dipoles. $165,000. VK4IK 07 5465 6053

CDE rotator model H-3/CD-44 115V.A.C with transformer 240-110 V.A.C. 30m multi strand cable. Gordon VK4GNN 07 4121 4405

FT101 ZD.FM. FV101 digital VFO FC901 ant.tuner. FL2001B amp. YAESU phone patch spkr. Total $1000. Nally crank up tower 50ft high gain 3EL heavy duty Thunderbird. DAIWA rotator with coax cable Total $400. Gray VK4OH QTHR. 07 4125 7167

IRCs for sale. Aust Post charge $2.00 ea and I can cash them for $1.50 in stamps (new rates since 4/10/99). I'll split the difference and sell for $1.60. You save 40¢ and I make only 10¢. Baycom modem for AX25 packet....perfect order.....$30.00. TS-820s & VFO-820 (ext vfo). Worked well when last used about a year ago, includes manual & Swan desk mic .....$550.00, IC2-GAT, NO NiCad but will include ext spkr mike, rubber, duck ant, Yaesu AD-12 power adaptor for cigarette lighter socket...$350.00, 486SX-25, 14" colour monitor (Win3.1 installed various others)....4Mb RAM, 200 Mb HDD...best offer considered. Panasonic KX-P1180 multi mode printer.....$100.00. Archer "15-1995" audio/video mixer/enhancer. never used. $50.00. All items in good working order at time of advert. Contact: Alan VK4AAR, POB 421, Gatton 4343. Ph: 07-5466 1880 0407-752 742 almee@locknet.com.au

FOR SALE SA

ICOM IC738 S/N 2456, 100w HF Transceiver, 101 memory channels, automatic antenna tuner, excellent condition, manual, in original packaging. $1600. John VK5HJ 08 8535 4278.

AR7 Power Supply, Kingsley Radio and RAAF identification plates on front panel, 12VDC/240VAC PSU type as shown in the AR7 manual, with spare 6X5GT valves, $40. Norbert VK5MQ (08) 87230315 QTHR

CREATE model RC5 antenna rotator serial No 043397E. Manual. 40mtrs connecting cable. Little used. $350. Derek QTHR 0883830447. Email- glenhardy@chariot.net.au

FOR SALE WA

HF Tranceivers:- Kenwood TS830s, Icom IC735, VHF 2mTranceivers Kenwood TM231A , Philips FM900. Accessories:- Kenwood AT230, Emotator Rotator, 4 Element 15/10 Duobander, 80/40 Dipoles, J pole 2M vertical, Timewave DSP-59. Offers and queries to Len, on 08 9964 3423 or email vk6kln@qsl.net

FOR SALE TAS

A full VHF/UHF Amateur Satellite station for sale.I really want to sell the lot together if possible....asking price $3200. Yaesu FT-736R (about $3000 new) std UHF and VHF plugins with input to varactor and output from discriminator and cables for TNC interface. DSP-12 TNC (about $1400 new) 9600baud, 1200 baud,etc, full featured antennas, helix and yagi sattrak4 (bought through Amsat_Aust) automates the station. rotators kenpro KR-5400-B full AZ/EL setup about ($1200 new) plus all necessary antenna/rotator cables, etc to complete the full station setup ALSO included...40plus metres of unused Heliax (Andrew LDF5-50A..foam dielectric about 1".. this retails at over $20/metre) ALSO included... quantity of WIA and other Amateur Radio magazines Dennis Grubb VK7YAO 9 Saunders St Wynyard 7325 Tasmania Ph 6442 4344 Mobile 0409 856 103

WANTED NSW

Tower sections ex-army steel galvanised 6ft. Will pay $20 each. Peter VK2EMU 02 9584 3236 or vk2emu@arrl.net

Plug in elements for thruline watt meter bird model 43 for 2m band 25/50 watt. Also Phillips FM92 U band transceiver. Ken VK2KJ 0412 003517 anytime

Copy of workshop manual and/or circuit diagram of Drake model SSRI cohmn receiver (SEIWA) S/N 774054. S R Dogger Tunnel Road, Stokers Siding NSW 2484 A/Hrs 02 6677 9292.

OCTAL Relays 8 or 11 Pin DPDT contacts. 12VDC coils. six required Peter VK2BEU (02) 9872 3381 pstuart@usf.com.au

WANTED VIC

Wanted two Philips UHF FM 828 transceivers T band in good condition. To be used for UHF links in the East Gippsland Repeater network. Details to Bob VK3ZAN. Ph 03 51567654.or Paket VK3ZAN@VK3BVP.Vic. or Email Bobprille@net-tec.com.au

WANTED QLD

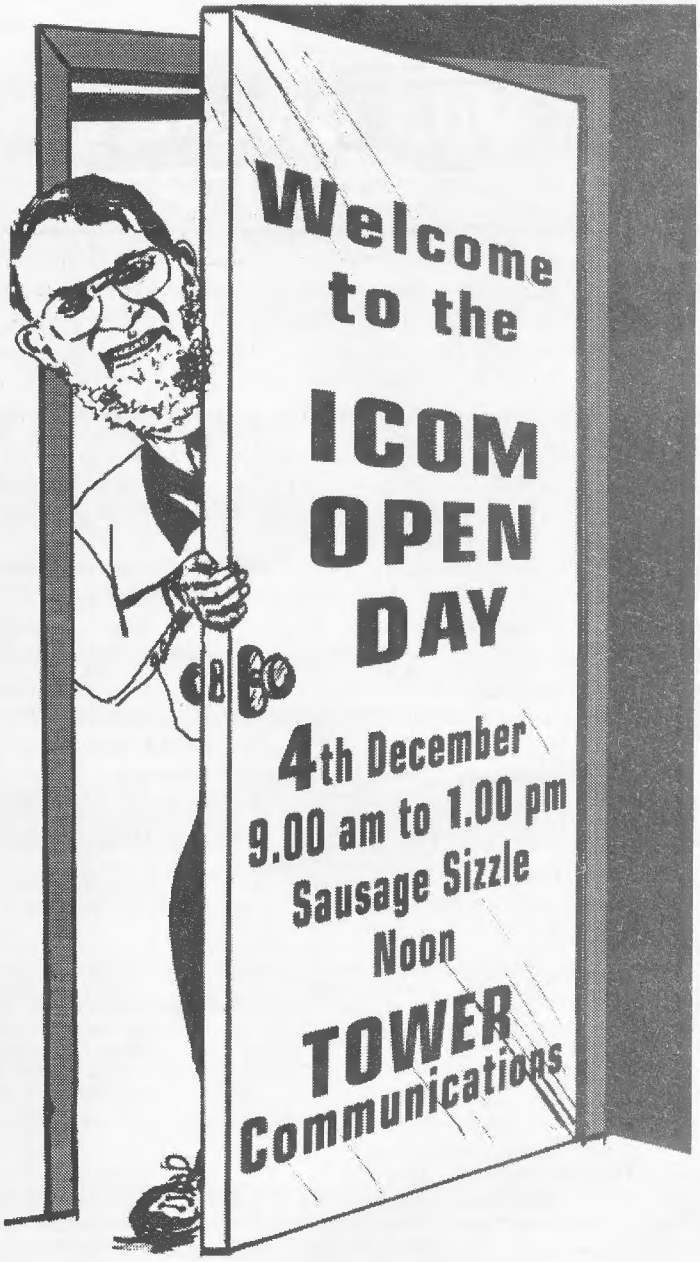
YAESU FT101B owners manual or copy, tubes, 6JS6A power. Amplifier 12By7A Driver for 101B. YAESU FL2100 final amplifier tubes 572B. John VK4SKY 0417 410503 P.O Box 1166 Coolangatta Qld 4225 Email: benoel@fan.net.au

Data for Pye 10.7MHz crystal filter. Copy of handbook and circuit for Kenwood TR3200 VHF transceiver. Len VK4JZ P.O Box 1108 Tewantin 4565

WANTED - WA

Radar Parts wanted for museum display LW/AW Radar Indicator chassis and or parts, Valve Caps to suit 807 and 6J7G valves, insulated extension couplings for potentiometer shafts.

Mark VK6AR 08) 9417 4536 or Packet at VK6AR@VK6BBS.#PER.#WA.AUS.OC for the WA RAAF RADAR GROUP



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TRADE ADS

• **AMIDON FERROMAGNETIC CORES:**

For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama).

www.cyberelectric.net.au/~rjandusimports

Agencies at: Assoc TV Service, Hobart: Truscotts Electronic World, Melbourne and Mildura: Alpha Tango Products, Perth: Haven Electronics, Nowra

http://www.hamsearch.com
a not-for-profit site that is a search engine for hams

• **WEATHER FAX programs** for IBM XT/ATs *** "RADFAXZ" $35.00, is a high resolution short-wave weather fax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" $45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" $75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3.00 postage. ONLY from M. Delahunty, 42 Villers St, New Farm QLD 4005. Ph 07 358 2785.

WIA Division Directory

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers		News Broadcasts Note: All times are local. All frequencies MHz.	Fees
VK1 ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Gilbert Hughes John Woolner Les Davey	VK1GH VK1ET VK1LD	VK1WI: 3.570 LSB, 146.950 FM each Sunday evening from 8.00pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org	(F) $72.00 (G) (S) $58.00 (X) $44.00
VK2 NSW Division 109 Wigram St Parramatta NSW (Office hours Mon-Fri 1100-1400) (PO Box 1066, Parramatta 2124) Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Secretary Treasurer Web: *http://marconi.mpce.mq.edu.au/wia* e-mail: *vk2wi@ozemail.com.au*	Michael Corbin Eric Fossey Eric Van De Weyer	VK2YC VK2EFY VK2KUR	From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.	(F) $69.00 (G) (S) $56.00 (X) $41.00
VK3 Victorian Division 40G Victory Boulevard Ashburton VIC 3147 (Office hours Tue & Thur 0830-1530) Phone 03 9885 9261 Fax 03 9885 9298	President CEO Secretary Web: *http://www.tbsa.com.au/~wiavic/* e-mail: *vk3wi@rint.com.au*	Jim Linton Barry Wilton Peter Mill	VK3PC VK3XV VK3APO	VK3BWI broadcasts on the 1st and 3rd Sunday of the month at 8.00pm. Primary frequencies, 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3WI on Victorian packet BBS and WIA VIC Web Site.	(F) $75.00 (G) (S) $61.00 (X) $47.00
VK4 Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 5496 4714	President Secretary Treasurer e-mail: *wiaq@brisbane.dialix.com.au* Web: *http://www.wiaq.powerup.com.au*	Colin Gladstone Peter Harding Alistair Elrick	VK4ACG VK4JPH VK4FTL	VK4WIA: 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 21.175 MHz, 28.400 MHz SSB, 29.220 MHz FM, 53.725 MHz FM, 147.000 MHz FM, 438.500 MHz (Brisbane only), and regional VHF/UHF repeaters at 0900 hrs EAST Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) $74.00 (G) (S) $60.00 (X) $46.00
VK5 South Australian Division (GPO Box 1234 Adelaide SA 5001) Phone 08 8294 2992	President Secretary Treasurer	Jim McLachlan David Minchin John Butler	VK5NB VK5KK VK5NX	VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.	(F) $75.00 (G) (S) $61.00 (X) $47.00
VK6 West Australian Division PO Box 10 West Perth WA 6872 Phone 08 9351 8873	Acting Pres. Secretary Treasurer Web: *http://www.faroc.com.au/~vk6wia/* e-mail: *vk6wia@faroc.com.au*	Cliff Bastin Christine Bastin Bruce Hedland-Thomas	VK6LZ VK6ZLZ VK6OO	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.825, 3.560, 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz, country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton and 146.900 (R) Mt William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.563 and 438.525 MHz : country relays on 146.350 and 146.900 MHz.	(F) $62.00 (G) (S) $50.00 (X) $34.00
VK7 Tasmanian Division PO Box 271 Riverside TAS 7250 Phone 03 6425 2923 Fax 03 6425 2923	President Secretary Treasurer Web: *http://www.wia.tasnet.net*	Ron Churcher Tony Bedelph John Bates	VK7RN VK7AX VK7RT	VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.	(F) $74.00 (G) (S) $60.00 (X) $46.00
VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).				**Membership Grades** **Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)** **Three-year membership available to (F) (G) (X) grades at fee x 3 times.**	

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Amateur Transceiver Radio 50

Andrews 14

Dick Smith .....IBC, 28,29

Icom..... OBC, 19

Tower.....7,.55

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YAESU VX-1R MICRO DUALBAND HANDHELD TRANSCEIVER

Wide receiver coverage, leading edge features, and Lithium Ion technology, packaged for convenience at a price that will surprise!

VX-1R shown full size

The Yaesu VX-1R is one of the world's smallest dualband amateur rigs, sporting a 2m/70cm transceiver with wideband receiver in a case sized just 47 x 81 x 25mm WHD. It has impressive memory and scanning facilities as well as receive coverage of VHF and UHF TV, AM and FM broadcast bands, AM aircraft band and other public service frequencies from 76 to 999 MHz*.

Leading-edge technology from the VX-1R's 500mW MOSFET power amplifiers together with the supplied 3.6V 700mA/H high-capacity Lithium Ion battery will provide many hours of superb local communications. Up to 1W output is available for longer range when external DC power is used. Extensive battery-saving features together with the Li-Ion battery's 2-hour recharge system yields long operating times under real-world conditions.

The VX-1R's extensive memory system provides 291 memory channels, most with Alpha-numeric labelling for easy recognition. A Smart Search™ system allows you to search a portion of a band you define, then loads any active frequencies into 31 special Smart Search™ memories for later inspection (great for finding activity when visiting a new area).

Besides being a fully-featured dual-band amateur transceiver, the VX-1R has extraordinarily wide receiver frequency coverage; you'll also be pleasantly surprised by the great audio on the FM broadcast band. A dual-watch facility is provided – and together with the AM, FM-narrow and FM-wide reception modes – you'll be having fun even when you're not operating on the amateur bands. For selective calling and listening, the VX-1R also includes a CTCSS encoder/decoder and a 104-code Digital Code Squelch (DCS) system as well as a Tone Search facility for both CTCSS and DCS encoded transmissions.

A great range of accessory lines for the VX-1R are available such as speaker/mics, a carry case, as well as a battery holder for 1 x AA alkaline battery which includes an inbuilt voltage step-up converter. Computer programming of the VX-1R is available via the optional ADMS-1E programming kit.

So when Yaesu says "Dick Tracy, we're waiting for your call" you can be sure they have good reason to do so. In fact, call into your Dick Smith Electronics' Hams Shack store for a demo of this fun new rig. Or phone 1300 366 644 for a copy of the Yaesu colour brochure.

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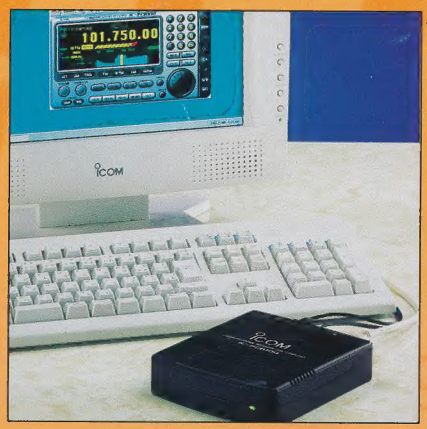

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Cruise the air waves with your computer. Turns your PC into a high performance 0.5 - 1300 MHz receiver (FM/WFM/AM modes) with plug'n play installation. Multi function control panel, wide frequency coverage, and unlimited memory channels.

R2
Fit the world's airwaves in your shirt pocket. Just 8.6cm high, wide 0.5 - 1300 MHz frequency range divided into 9 bands plus FM/WFM/AM, 400 memory channels, great sound in rugged water resistant construction.

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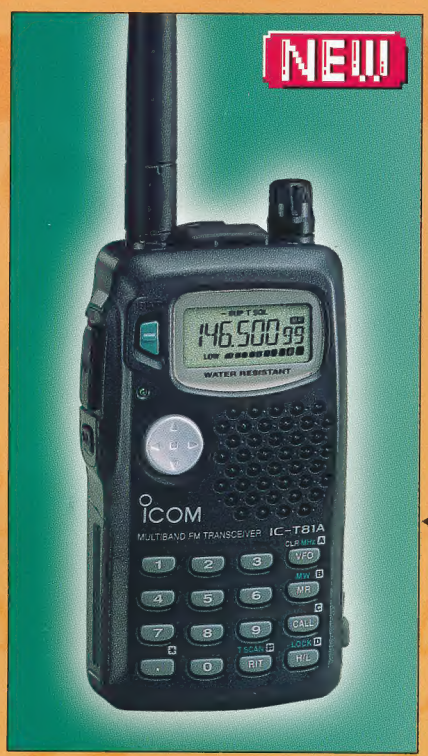
A totally new approach to dual band mobile. Powerful performance on 2m and 70cm bands, remote control capability, and a first for mobile rigs...a multi-function colour LCD screen! All your information is right in front of you in colourful 3D-like characters and icons.



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A remarkably compact quad bander. Superb clarity on the 6m, 2m, 70cms and 23cm bands. It's water resistant, with tone squelch and pocket beep functions standard, plus you can change volume and bands even quicker with the 'joy-stick' style multi-function switch.

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